

Das Tierreich.

Eine Zusammenstellung und Kennzeichnung der
rezenten Tierformen.

— Begründet von der Deutschen Zoologischen Gesellschaft. —

Im Auftrage der

Königl. Preuß. Akademie der Wissenschaften zu Berlin

herausgegeben von

Franz Eilhard Schulze.

„Πάντα ζει.“

„Sine systemate chaos.“

39. Lieferung.

Crustacea.

Cumacea (Sympoda)

by

the Rev. T. R. R. Stebbing
Tunbridge Wells.

With 137 figures.



Berlin.

Verlag von R. Friedländer und Sohn.
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Seit Linnés *Systema naturae* ist die Zahl der bekannten Tierformen so angewachsen, daß eine neue, umfassende Übersicht des Systems, die als Abschluß der bisherigen und als Grundlage künftiger systematischer Forschung dienen kann, ein dringendes Bedürfnis geworden ist. Um diese Aufgabe zu erfüllen, hat die Deutsche Zoologische Gesellschaft das vorliegende Werk begründet und dessen wissenschaftliche Leitung Herrn Geh. Reg.-Rat Prof. **F. E. Schulze** in Berlin anvertraut. Das gewaltige Unternehmen fand die Unterstützung der Königlich Preussischen Akademie der Wissenschaften, die in Würdigung der Bedeutung des Werkes im Jahre 1902 die Herausgabe übernommen hat.

Die einheitliche Durchführung des Werkes ist durch eine Reihe wohldurchdachter Bestimmungen gesichert. Für die Benennung der Tierformen und ihrer systematischen Kategorien gelten die von dem 5. internationalen Zoologen-Kongreß zu Berlin (1901) angenommenen Regeln.

Die Herausgabe findet in Lieferungen statt, die je eine oder mehrere nahe-
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A. Hopper, Burg b. M.

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(The bibliography is carried down to February 1. 1913.)

Preface.

In regard to the small but very distinct group of malacostracan Crustacea with which this monograph is concerned, special honour may be ascribed to the Russian writer Lepechin and the American Say as clear sighted pioneers. For elaborating our knowledge of the group Henrik Krøyer of Copenhagen is foremost in the first half of the nineteenth century, while G. O. Sars of Christiania in the second half outshines all other workers. During the century now current Dr. Calman and Dr. Zimmer have taken the lead in progress. That many other authorities have done excellent service will be clear from the present summary of their labours, and their various merits will be best estimated by those who have occasion and opportunity to consult the original memoirs. Among zealous and sagacious collectors David Robertson of Cumbræ, helpful as he was to Spence Bate, Anton Dohrn, and other well known students, ought not himself to be forgotten.

For the last twenty years, and recently with more emphasis than before by precept and practice, I have urged the expedience of assigning the masculine gender to all generic names of animals. As, however, the older custom is here followed, the Editor of „Das Tierreich“ obligingly allows me to explain that this is due to the established rules of his vast undertaking, and does not imply any change in my personal opinion. Similarly, the ordinal name *Cumacea* is retained for old acquaintance sake, although, with the cancelling of the generic name *Cuma*, the alternative title of *Sympoda* for the Order invites, and has from some authors of repute received, recognition and approval.

It is a pleasure to add, though it scarcely needs adding, that in passing through the press these pages have been greatly indebted to the constant care of the editorial staff.

July 26, 1913.

Thomas R. R. Stebbing,
Ephraim Lodge, The Common, Tunbridge Wells.

Abbreviations of the titles of literature

- Acta Ac. Petrop.* — Acta Academiae Scientiarum Imperialis Petropolitanae. Petropoli. 4.
- Act. Soc. Linn. Bordeaux.* — Actes de la Société Linnéenne de Bordeaux. Bordeaux, Paris, Londres. 8.
- H. & A. Adams, Gen. Moll.* — The Genera of recent Mollusca; arranged according to their Organization. By Henry Adams and Arthur Adams. v. 1, 2; atl. London. 1858 (1853—58). 8.
- L. Agassiz, Nomencl. zool.* — Nomenclator zoologicus, continens Nomina systematica Generum Animalium tam viventium quam fossilium. Auctore L. Agassiz. 1 Vol. & Index universalis. Soloduri. 1842—46, 46. 4.
- Ann. nat. Hist.* — The Annals and Magazine of natural History, including Zoology, Botany, and Geology. London. 8.
- Ann. S. Afr. Mus.* — Annals of the South African Museum. Cape Town. 8.
- Ann. Sci. nat.* — Annales des Sciences naturelles. — [Sér. 2—4:] Zoologie ([Sér. 5 & sequ.:] Zoologie et Paléontologie). Paris. 8.
- Ann. Scott. nat. Hist.* — The Annals of Scottish natural History. A quarterly Magazine with which is incorporated the Scottish Naturalist. Edinburgh & London. 8.
- Annuaire Mus. St.-Petersb.* — Annuaire du Musée zoologique de l'Académie Impériale des Sciences de St.-Petersbourg. St.-Petersbourg. 8.
- Ann. Univ. Lyon* — Annales de l'Université de Lyon. Paris. 8.
- Arch. Naturg.* — Archiv für Naturgeschichte. Berlin. 8.
- Arch. Naturv. Kristian.* — Archiv for Mathematik og Naturvidenskab. Kristiania. 8.
- Arch. Zool. expér.* — Archives de Zoologie expérimentale et générale. Paris. 8.
- Belcher, Last arct. Voy.* — The last of the arctic Voyages; being a Narrative of the Expedition in H. M. S. Assistance, under the Command of Captain Sir Edward Belcher, in Search of Sir John Franklin, during the Years 1852—54. With Notes on the natural History, by Sir John Richardson, [Richard] Owen, Thomas Bell, J. W. Salter, and Lovell Reeve. Vol. 1, 2. London. 1855. 8.
- T. Bell, Brit. stalk-eyed Crust.* — A History of the British stalk-eyed Crustacea by Thomas Bell. London. 1853. 8.
- Ber. Komm. D. Meere* — Bericht der Kommission zur wissenschaftlichen Untersuchung der Deutschen Meere in Kiel. Berlin. 2.
- Bibl. hautes Études* — Bibliothèque de l'École des hautes Études. Section des Sciences naturelles. Paris. 8.
- Bih. Svenska Ak.* — Bihang till Kongl. Svenska Vetenskaps-Akademiens Handlingar. — Afdelning 4, Zoologi. Stockholm. 8.
- Borlase, Nat. Hist. Cornwall* — The natural History of Cornwall ... by Will. Borlase. London 1758. 2.
- Brit. Ass. Handb.* — British Association Handbook. Fauna, Flora and Geology of the Clyde Area, edited by G. F. Scott Elliot, Malcolm Laurie and J. Barclay Murdach. Glasgow. 1901. 8.
- Bull. Ac. St.-Petersb.* — Bulletin de l'Académie Impériale des Sciences de St.-Petersbourg. St.-Petersbourg. 4 (8).
- Bull. Mus. Paris* — Bulletin du Muséum d'Histoire naturelle. Paris. 8.

- Bull. Soc. Moscou* — Bulletin de la Société Impériale des Naturalistes de Moscou. Moscou. 8.
- Burmester, Beitr. Cuma* — Beiträge zur Anatomie und Histologie von Cuma Rathkii Kr. Inaugural-Dissertation . . . Kiel vorgelegt von Johannes Burmester. Kellinghusen. 1883. 8.
- Camp. arct. Orléans* — Duc d'Orléans Campagne arctique de 1907. Bruxelles. 4.
- Cellule* — La Cellule. Recueil de Cytologie et d'Histologie générale. Publ. par J. B. Carnoy, G. Gilson et J. Denys. Lierre & Gand, Lierre & Louvain. 4.
- Claparède & Lachmann, Étud. Infus.* — Études sur les Infusoires et les Rhizopodes par Édouard Claparède et Johannes Lachmann. Partie I—III. Genève et Bale. 1868. 4. [1858, 59, 61 in: Mém. Inst. Genev., v. 5, 6, 7.]
- Claus, Freileb. Cop.* — Die frei lebenden Copepoden mit besonderer Berücksichtigung der Fauna Deutschlands, der Nordsee und des Mittelmeeres von C. Claus. Leipzig. 1863. 4.
- G. Cuvier, Règne an., ed. 2* — Le Règne animal distribué d'après son Organisation, pour servir de Base à l'Histoire naturelle des Animaux et d'Introduction à l'Anatomie comparée. Par [Georges] Cuvier. Nouvelle Édition, revue et augmentée. [Tom. 4 & 5:] Par [Pierre André] Latreille. Tom. 1—5. Paris. 1829, 29, 30, 29, 29. 8.
- Dalyell, Powers Creator* — The Powers of the Creator displayed in the Creation; or, Observations on Life amidst the various Forms of the humbler Tribes of animated Nature: with practical Comments and Illustrations. By John Graham Dalyell. Vol. 1—3. London. 1851, 53, 58. 4.
- De Kay, Zool. N.-York* — Zoology of New-York, or the New-York Fauna; comprising detailed Descriptions of all the Animals hitherto observed within the State of New-York, with brief Notices of those occasionally found near its Borders, and accompanied by appropriate Illustrations. By James E. De Kay. — Part 6. Crustacea. Albany. 1844. 4.
- Denk. Ak. Wien* — Denkschriften der Kaiserlichen Akademie der Wissenschaften. — Mathematisch-naturwissenschaftliche Classe. Wien. 4.
- A. G. Desmarest, Consid. gén. Crust.* — Considérations générales sur la Classe des Crustacés, et Description des Espèces de ces Animaux, qui vivent dans la Mer, sur les Côtes, ou dans les Eaux douces de la France. Par Anselme-Gaetan Desmarest. Paris, Strasbourg. 1825. 8.
- Dijmphna Udb.* — Dijmphna-Togtets zoologisk-botaniske Udbytte. Udgivet . . . af Kjøbenhavns Universitets zoologiske Museum ved Chr. Fr. Lütken. Kjøbenhavn. 1887. 8.
- Edinb. new phil. J.* — The Edinburgh new philosophical Journal. Conducted by Robert Jameson. Edinburgh. 8.
- Ent. Zeit. Stettin* — Entomologische Zeitung. Herausgegeben von dem entomologischen Vereine zu Stettin. Stettin. 8.
- Ergeb. Hamburg. Magalh.-Sammelr.* — Ergebnisse der Hamburger Magalhaensischen Sammelreise 1892/93. Herausgegeben vom Naturhistorischen Museum zu Hamburg. Hamburg. 1896—1907. 8.
- Ergeb. Plankton-Exp.* — Ergebnisse der in dem Atlantischen Ozean von Mitte Juli bis Anfang November 1889 ausgeführten Plankton-Expedition der Humboldt-Stiftung. Auf Grund von gemeinschaftlichen Untersuchungen einer Reihe von Fach-Forschern herausgegeben von Victor Hensen. Kiel und Leipzig. 4.
- Ergeb. Schwed. Südp.-Exp.* — Wissenschaftliche Ergebnisse der Schwedischen Südpolar-Expedition 1901—1903 unter Leitung von Otto Nordenskjöld. Stockholm. 4.
- Ergeb. Tiefsee-Exp.* — Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem Dampfer „Valdivia“ 1898—1899. Im Auftrage des Reichsamtes des Innern herausgegeben von Carl Chun. Jena. 4.
- J. C. Fabricius, Reise Norweg.* — Johann Christian Fabricius Reise nach Norwegen mit Bemerkungen aus der Naturhistorie und Oekonomie. Hamburg. 1779. 8.
- J. C. Fabricius, Syst. Ent.* — Io. Christ. Fabricii Systema Entomologiae, sistens Insectorum Classes, Ordines, Genera, Species, adiectis Synonymis, Locis, Descriptionibus, Observationibus. Flensburgi et Lipsiae. 1775. 8.

- Fauna arctica* — Fauna arctica. Eine Zusammenstellung der arktischen Tierformen mit besonderer Berücksichtigung des Spitzbergen-Gebietes auf Grund der Ergebnisse der Deutschen Expedition in das Nördliche Eismeer im Jahre 1898. Unter Mitwirkung zahlreicher Fachgenossen herausgegeben von Fritz Römer und Fritz Schaudinn. Nach ihrem Tode fortgesetzt von August Brauer. Jena. 4.
- Folin & Périer, Fonds Mer* — Les Fonds de la Mer. Étude internationale sur les particularités nouvelles des régions sous-marines commencée et dirigée par Berchon, L. de Folin, L. Périer. Vol. 1, 2, 4. Bordeaux, Paris. 1868—70; 72—75, 81—?. 8.
- Forh. Selsk. Christian.* — Forhandlinger i Videnskabs-Selskabet i Christiania. Christiania. 8.
- Gay, Hist. Chile* — Historia física y política de Chile segun Documentos adquiridos . . . y publicada bajo los Auspicios del supremo Gobierno por Claudio Gay. — Zoologia. Tom. 1—8; Atl. Paris. 1847—54. 8 & 2.
- J. F. Gmelin, Syst. Nat.* — Caroli a Linné Systema Naturae per Regna tria Naturae, secundum Classes, Ordines, Genera, Species, cum Characteribus, Differentiis, Synonymis, Locis. Editio XIII, aucta, reformata. Cura Jo. Frid. Gmelin. — Tomus I. Pars 1—7. Lipsiae. 1788 [Pars 6 & 7: 1791]. 8.
- J. B. Godart (Duponchel), Hist. Lép.* — Histoire naturelle des Lépidoptères ou Papillons diurnes des Environs de Paris ([Tom . . . :] Papillons de France), par J.-B. Godart; Ouvrage basé sur la Méthode de Latreille; continuée par P.-A.-J. Duponchel. Tom. 1—11; Suppl. Tom. 1—4. Paris. 1821, 22, 21, 22, 24, 26, 27; 30, 34, 36, 36; 32, 35, 36, 42. 8.
- Gronovius, Zoophyl.* — Zoophylacium Gronovianum, exhibens Animalia Quadrupeda, Amphibia, Pisces, Insecta, Vermes, Mollusca, Testacea, et Zoophyta, quae in Museo suo adservavit, Examini subjecit, systematice disposuit atque descripsit Laur. Theod. Gronovius. Fasciculus 1—3. Lugduni Batavorum. 1781 (1763, 64, 81). 2.
- J. F. W. Herbst, Naturg. Krabben Krebse* — Versuch einer Naturgeschichte der Krabben und Krebse nebst einer systematischen Beschreibung ihrer verschiedenen Arten von Johann Friedrich Wilhelm Herbst. Band 1—3. Berlin und Stralsund. 1790 (1782—90), 96 (1791—96), 99—1804. 4 & 2.
- Herdman, Rep. Ceylon Pearl Fish.* — Report to the Government of Ceylon on the Pearl Oyster Fisheries of the Gulf of Manaar, by W. A. Herdman. With supplementary Reports upon the marine Biology of Ceylon, by other Naturalists. Published . . . by the Royal Society. London. 4.
- Hist. An. artic.* — Histoire naturelle des Animaux articulés, Annelides, Crustacés, Arachnides, Myriapodes et Insectes. — Histoire naturelle des Crustacés, des Arachnides et des Myriapodes, par [Hippolyte] Lucas. Paris. 1840. 8.
- Illiger, Prodr. Mam. Av.* — Caroli Illigeri Prodrum Systematis Mammalium et Avium additis Terminis zoographicis utriusque Classis, eorumque Versione Germanica. Berolini. 1811. 8.
- Int. sci. Ser.* — The international scientific Series. London. 8.
- J. Ac. Philad.* — Journal of the Academy of natural Sciences of Philadelphia. Philadelphia. 8 (4).
- Jahresber. Comm. D. Meere* — Jahresbericht der Commission zur wissenschaftlichen Untersuchung der Deutschen Meere in Kiel. Berlin. 2.
- Jena. Z.* — Jenaische Zeitschrift für Naturwissenschaft. Leipzig (Jena). 8.
- J. Linn. Soc. London* — The Journal of the Linnean Society. — Zoology. London. 8.
- J. R. Dublin Soc.* — Journal of the Royal Dublin Society. Dublin, Edinburgh, London. 8. v. 1—7: 1858—78. [sequ.: *P. R. Dublin Soc.*]
- Kossmann, Reise Roth. Meer.* — Zoologische Ergebnisse einer im Auftrage der Königl. Academie der Wissenschaften zu Berlin ausgeführten Reise in die Küstengebiete des Rothen Meeres. Herausgegeben mit Unterstützung . . . von Robby Kossmann. 1. Hälfte. 2. Hälfte, I. Lieferung. Leipzig. 1877, 80. 4.

- Lang, Handb. Morphol.* — Handbuch der Morphologie der wirbellosen Tiere bearbeitet von . . . herausgegeben von Arnold Lang. Jena. 8.
- Latreille, Cours Ent.* — Cours d'Entomologie, ou de l'Histoire naturelle des Crustacés, des Arachnides, des Myriapodes et des Insectes; à l'Usage des Élèves de l'École du Muséum d'Histoire naturelle; Par [Pierre André] Latreille. Première Année. Ouvrage accompagné d'un Atlas. Paris. 1831. 8.
- Mém. Ac. Belgique* — Mémoires de l'Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique. Bruxelles. 4.
- Mem. Boston Soc.* — Memoirs read before the Boston Society of natural History, being a new Series of the Boston Journal of natural History. Boston. 4.
- Mém. Soc. ent. Belgique* — Mémoires de la Société entomologique de Belgique. Bruxelles. 8.
- Mém. Soc. Kiew* — Mémoires de la Société des Naturalistes de Kiew. Записки Кіевскаго Общества Естествоиспытателей. Kiew. Кіевъ. 8.
- H. Milne Edwards, Hist. nat. Crust.* — Histoire naturelle des Crustacés, comprenant l'Anatomie, la Physiologie et la Classification de ces Animaux; par [Henri] Milne Edwards. Tom. 1—3; Planches. Paris. 1834, 37, 40. 8.
- Morphol. Jahrb.* — Morphologisches Jahrbuch. Leipzig. 8.
- Mt. Stat. Neapel* — Mittheilungen aus der zoologischen Station zu Neapel. Leipzig (Berlin). 8.
- Fr. Müller, Für Darwin* — Für Darwin von Fritz Müller. Leipzig. 1864. 8.
- Nat. antarct. Exp.* — National antarctic Expedition 1901—1904. Natural History. London. 4.
- Nat. Hist. Rev.* — The natural History Review. A quarterly Journal. London. 8.
- Nat. Hist. Tr. Northumb.* — Siehe: Tr. nat. Hist. Soc. Northumb.
- Naturh. Tidsskr.* — Naturhistorisk Tidsskrift. Kjøbenhavn. 8.
- A. M. Norman, Mus. Norman.* — Museum Normanianum, or a Catalogue of the Invertebrata of Europe and the Arctic and North Atlantic Oceans, which are contained in the Collection of the Rev. Canon A[lfred] M[erle] Norman. Durham. 8.
- A. M. Norman & T. Scott, Crust. Devon Cornwall* — The Crustacea of Devon and Cornwall by Canon A. M. Norman and Thomas Scott. London. 1906. 8.
- Norske Nordhavs-Exp.* — Den Norske Nordhavs-Expedition 1876—1878. The Norwegian North-Atlantic Expedition 1876—1878. — 6. Bind (Volume). XIV & XV. Crustacea, I & II. Ved (By) G. O. Sars. Christiania. 1885, 86. 4.
- Norske Selsk. Skr. 19. Aarh.* — Det Kongelige Norske Videnskabers-Selskabs Skrifter i det 19de Aarhundrede. Kjøbenhavn, Thronhjelm. 4 (8).
- Nyt Mag. Naturv.* — Nyt Magazin for Naturvidenskaberne. Christiania. 8.
- Öfv. Ak. Förh.* — Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlingar. Stockholm. 8.
- P. Ac. Philad.* — Proceedings of the Academy of natural Sciences of Philadelphia. Philadelphia. 8.
- Paulson, Unters. Krebse rot. Meer.* — Изслѣдованія Ракообразныхъ Краснаго Моря съ Замѣтками относительно Ракообразныхъ другихъ Морей. О. Паульсона. Часть I. Кіевъ. 1875. 4. Untersuchungen über die Crustaceen des Roten Meeres mit Bemerkungen betr. die Crustaceen anderer Meere. O. Paulson. Vol. 1. 1875. 4.
- Pennant, Brit. Zool., ed. 5* — British Zoology, a new [5.] Edition. Vol. 1—4. London. 1812. 8.
- P. Irish Ac.* — Proceedings of the Royal Irish Academy. — [Ser. 2:] Science. Dublin. 8.
- P. Linn. Soc. London* — Proceedings of the Linnean Society of London. [London.] 8.
- P. Liverp. biol. Soc.* — Proceedings [[Vol. 4 & sequ:] and Transactions] of the Liverpool biological Society. Liverpool. 8.
- P. nat. Hist. Soc. Glasgow* — Proceedings | and Transactions | of the natural History Society of Glasgow. Glasgow. 8.
- P. R. Soc. London* — Proceedings of the Royal Society of London. London. 8.
- P. U. S. Mus.* — Proceedings of the United States national Museum. Washington. 8.

- P. zool. Soc. London* — Proceedings of the zoological Society of London. London. 8.
- Quart. J. geol. Soc.* — The quarterly Journal of the geological Society of London. London. 8.
- Recu. zool. Suisse* — Recueil zoologique Suisse. Publié sous la Direction de Hermann Fol. Genève-Bale. 8.
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Cumacea

(Sympoda, T. Stebbing)

1779 Gen. *Gammarus* (part.), J. C. Fabricius, Reise Norweg., p. 249 | 1780 Gen. *Oniscus* (part.), Lepechin in: Acta Ac. Petrop., 1778 v. 1 p. 248 | 1788 Gen. and Subgen. *Cancer* (*Gammarus*) (part.), J. F. Gmelin, Syst. Nat., v. 5 p. 2993 | 1793 Gen. and Subgen. *Cancer* (*Oniscus*) (part.), J. F. W. Herbst, Naturg. Krabben Krebse, v. 21v p. 146 | 1804 Gen. *Cancer* (part.), Montagu in: Tr. Linn. Soc. London, v. 7 p. 70 | 1812 Gen. *Astacus* (part.), Pennant, Brit. Zool., ed. 5 v. 4 p. 35 | 1818 Gen. *Diastylis*, Say in: J. Ac. Philad., v. 11 p. 313 | 1828 Gen. *Cuma* (non [Calonne] Mus. Calonn. 1797 Moll.), H. Milne-Edwards in: Ann. Sci. nat., v. 13 p. 294 | 1829 Gen. *Condylura* (non Illiger 1811 Mam.), Latreille in: G. Cuvier, Règne an., ed. 2 v. 4 p. 153 | 1831 Ord. *Di cladopa* (part.), Latreille, Cours Ent., v. 1 p. 159, 414 | 1840 Ord. „*Di cladopodes*“, group „*Cumites*“ (part.), H. Lucas, Hist. An. artic., p. 266, 267 | 1846 Ord. *Cumacea*, Krøyer in: Naturh. Tidsskr., ser. 2 v. 211 p. 202, 203 | 1849 Larval Decapod, Gen. *Cuma*, H. Nicolet in: Gay, Hist. Chile, v. 3 p. 220 | 1852 Subtrib. *Cumidea*, J. D. Dana in: U. S. expl. Exp., v. 131 p. 502 | 1853 Fam. *Cumadae*, T. Bell, Brit. stalk-eyed Crust., p. 321 | 1856 Fam. *Diastylidae*, Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 449 | 1863 Fam. *D.*, G. O. Sars in: Nyt Mag. Naturv., v. 12 p. 236 | 1863 Division „*Cumaceen*“, C. Claus, Freileb. Cop., p. 18 | 1865 Ord. *Cumacea*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 153 | 1883 Group *Cuma*, Burmester, Beitr. *Cuma* (Anatomy and Histology) | 1883 *Cumacea*, Boas in: Morphol. Jahrb., v. 8 p. 571 | 1887 *C.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 1 | 1893 Subord. *C.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 291 | 1893 „*Cumaceen*“, Butschinsky in: Zool. Anz., v. 16 p. 386 (Embryology) | 1899 *Cumacea*, G. O. Sars, Crust. Norway, v. 3 | 1900 Ord. *Sympoda*, T. Stebbing in: Willey, Zool. Results, pars 5 p. 606, 609 | 1901 Subord. *S.*, T. Scott in: Brit. Ass. Handb., p. 332 | 1905 Ord. *Cumacea*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 3 | 1906 Ord. *Sympoda*, A. M. Norman & T. Scott, Crust. Devon Cornwall, p. 29 | 1909 *S.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 311 p. 25 | 1907 *S.*, A. M. Norman in: Ann. nat. Hist., ser. 7 v. 20 p. 361 | 1908 „*Cumaceen*“, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 155 | 1908 *Sympoda*, Stappers in: Arch. Zool. expér., ser. 4 v. 8 Notes p. 98 | 1909 *S.*, Stappers in: Cellule, v. 25 p. 352 (alimentary system) | 1910 *S.*, T. Stebbing in: Ann. S. Afr. Mus., v. 61v p. 409 | 1911 *S.*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 99 | 1912 *Cumacea*, Calman in: P. U. S. Mus., v. 41 p. 603 | 1912 *Sympoda*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 129 | 1913 *S.*, Giesbrecht in: Lang, Handb. Morphol., v. 4 p. 13.

Externally the body is divisible into three compartments: 1) a large carapace covering the sessile eye or pair of eyes when present, the bases of two pairs of antennae, the mandibles, two pairs of maxillae, and three pairs of maxillipeds; 2) five leg-bearing segments all normally free but subject to fusion of the

first, second, and third, with the carapace and of one with another among themselves, each limb of the first pair having its

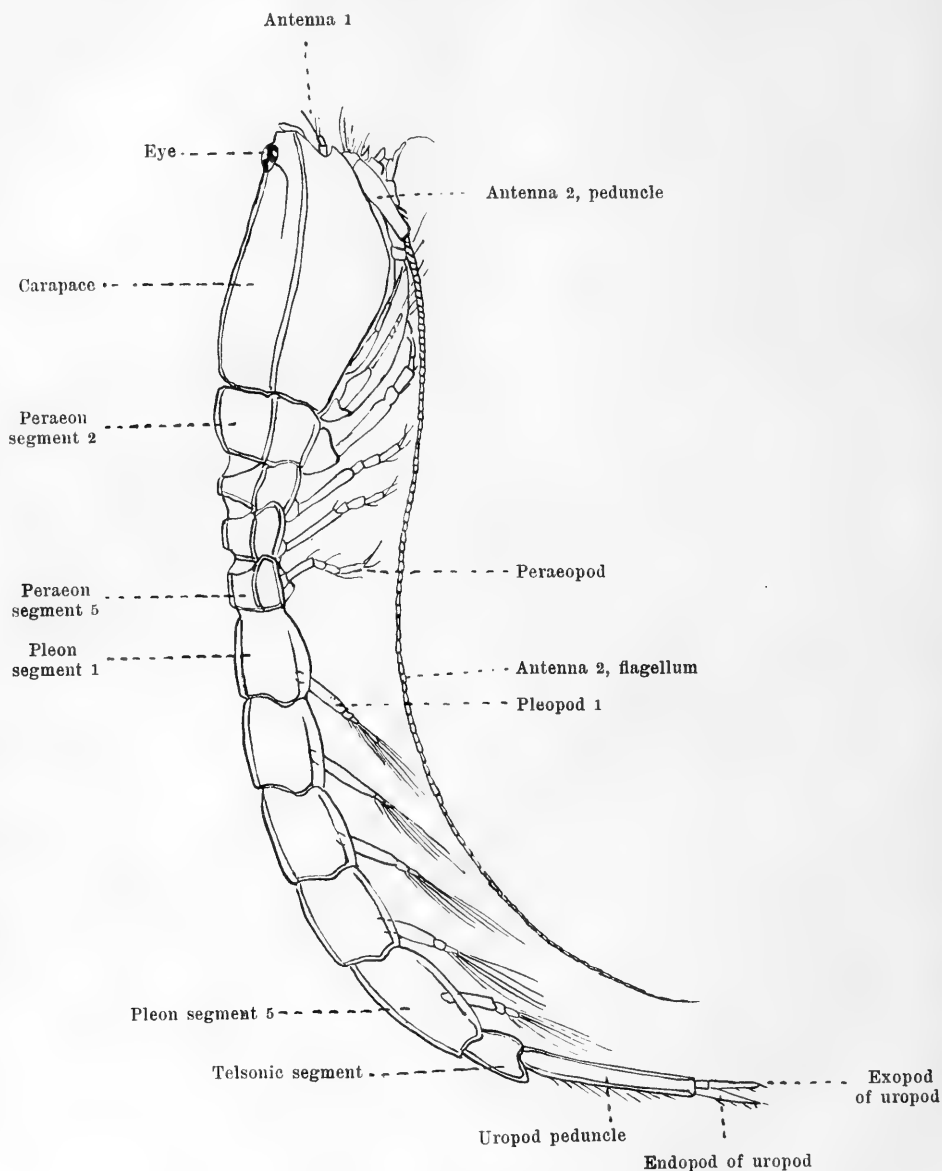


Fig. 1.

Bodotria arenosa (after G. O. Sars).

exopod or swimming-branch, an appendage which may or may not recur on any or all of the three following pairs but is never found on the fifth pair; 3) a flexible pleon of six or seven mo-

vably articulated segments, of which the first five may carry each a pair of pleopods, and the sixth is always furnished with a pair of uropods, while the seventh, the telson, never has appen-

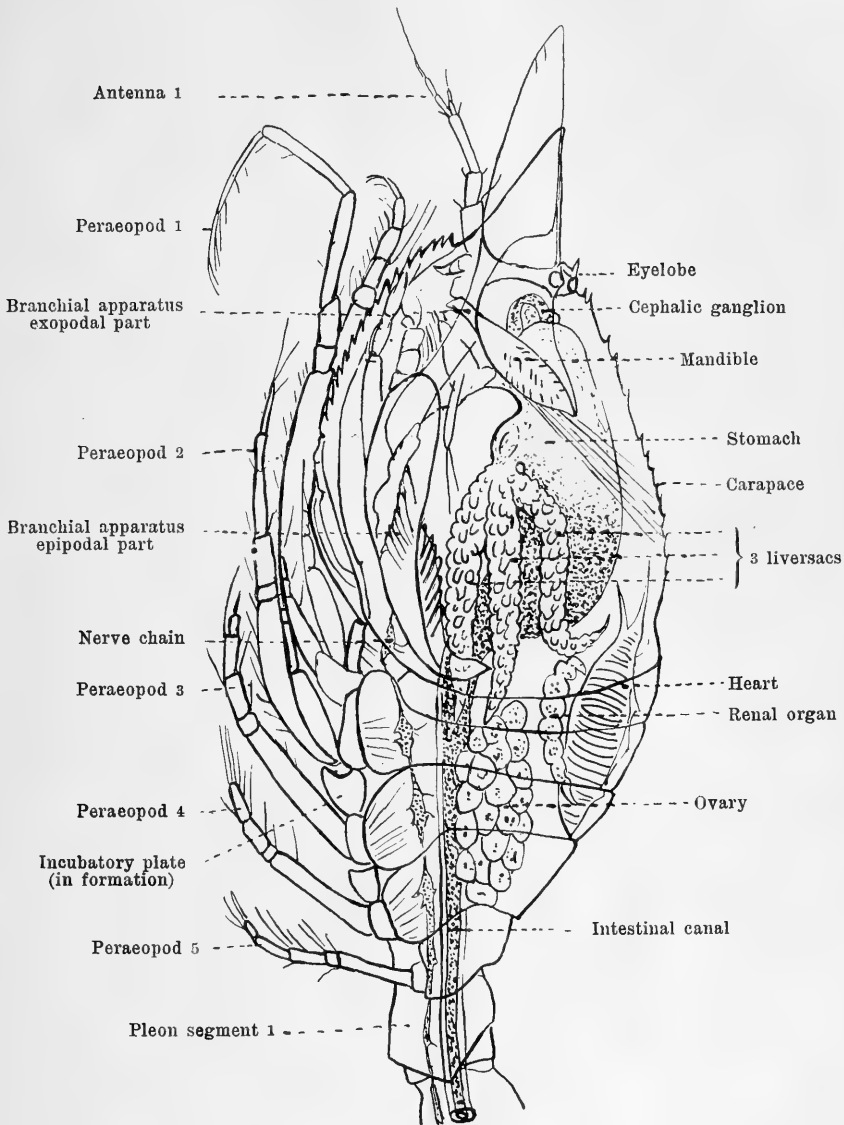


Fig. 2.
Diastylis lucifer (after G. O. Sars).

dages. Internally, the heart (so far as known) within a narrow pericardial sinus has three pairs of lateral openings, is fusiform, and does not extend beyond the peraeon segments; a short dilated one-chambered stomach is followed by a long, generally straight,

intestinal canal with the anal opening in the telson, or in the equivalent portion of the telsonic segment, when the telson itself is in fusion with the sixth segment of the pleon; hepatopancreatic glands situated below the stomach form from one to four pairs of lobes; the nerve chain has a dorsal cephalic ganglion followed ventrally by ten well developed ganglia and six caudal ganglia of which all but the last are very slight, the whole series connected by double commissures. Ovaries and testes paired. Development of young carried far forward within the body of the mother.

Integument calcified, more or less brittle. The carapace usually has a bell-shaped frontal lobe, with small, often eyeless, eyelobe at its apex, both enclosed by a pair of pseudorostral lobes drawn round from the sides to meet in front; the inferolateral margins fold underneath, leaving a space which is occupied by the third pair of maxillipeds except for a narrow opening on either side to admit water into the branchial cavities; when the epipods of the first maxillipeds, commonly furnished more or less with branchial leaflets, have been sufficiently irrigated, the pair of exopods in combination, in coalescence, or separately and apart shoot forward to leave room for the water to pass out in front, and are then withdrawn to close the openings till a fresh supply has been made use of, this respiratory arrangement being apparently found only in this Order of Crustacea. The fifth pedigerous segment is narrower than the rest, its appendages more or less late in development, and sometimes, it appears, permanently wanting. The narrow pleon is always without pleopods in the female. The telson, to which the anal aperture belongs, is often fused with the preceding segment, the term telsonic segment being applied to the resulting compartment.

Eyes may be entirely wanting, or only represented by pigment, or efficient with corneal lenses varying in number from 2 or 3 to 11; the lenses of the single eye are usually but not always in close proximity; eyes distinctly paired are rare. First antennae never elongate, the peduncle three-jointed, often stouter in male than in female, principal flagellum scarcely ever as long as the peduncle, tipped with one or two sensory filaments, and often in the male surrounded at the base by a fascicle of them, accessory or medial flagellum smaller than the principal, sometimes almost imperceptible. Second antennae in female from one- to five-jointed, never elongate; in the adult male sometimes exceeding the length of the body by the gradually elongated, many-jointed flagellum, the last two joints of the peduncle often fringed with brush of sensory filaments, the whole apparatus resembling similar structures among the Amphipoda and Phyllopoda, sheltered when out of use at the sides of the body; the flagella in Lamprops are of moderate length, prehensile, used for clasping the female. Upper lip simple, often faintly emarginate. Lower lip bilobed. Mandible without palp, with dentate cutting edge, accessory plate at least on one member of the pair, a spine-row of spines varying from two to a score, molar stout or rarely slender, base of the trunk usually narrowing to the rear, sometimes broad. First maxillae as a rule with medial plate narrower than the lateral, surrounded by few spines, lateral plate with about ten, the so-called palp turned straight back or rarely absent, when present carrying distally two filaments or a single filament, probably employed in cleansing the epipod of the first maxillipeds and its branchial leaflets. Second maxillae generally divided into two or three spiniferous plates, occasionally undivided. First

maxillipeds with second joint usually produced into a plate furnished with coupling spines, the third joint obscure, rarely the last joint degraded with the three preceding joints fused into one, the branchial leaflets varying in number from two or three, or in female even none, to several dozens. Second maxillipeds having at the base a pair of plates, perhaps epipodal,

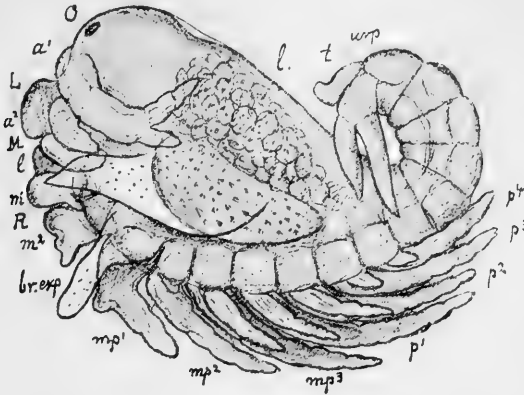


Fig. 3.

Larval stage of *Diastylis lucifer* (Kröyer), after Sars.

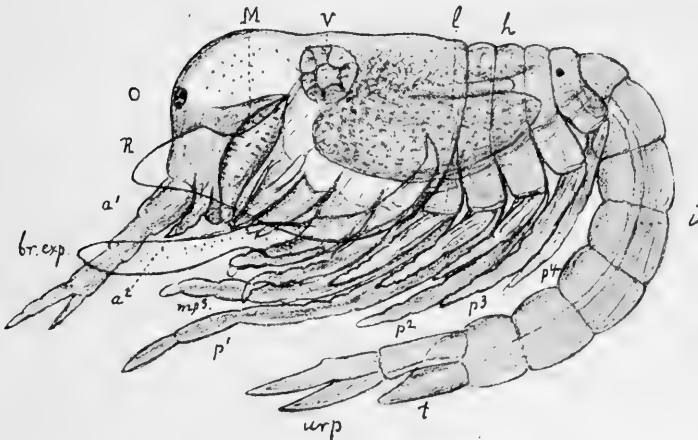


Fig. 4.

Later larval stage of *Diastylis lucifer* (Kröyer), after Sars.

Fig. 3 and 4. *a*¹ antenna 1, *a*² antenna 2, *br.exp.* exopodal part of the branchial apparatus, *h* heart, *i* intestine, *L* anterior lip, *l* posterior lip, *l* liver sacs, *M* mandibles, *m*¹ anterior maxilla, *m*² posterior maxilla, *mp*¹—*mp*³ maxilliped 1—3, *O* eye, *p*¹—*p*⁴ pereopod 1—4, *R* rostral plates of carapace, *t* telson, *urp* uropod, *v* remnant of the yolk-mass.

which in the female send a fan of filaments into the incubatory cavity. Third maxillipeds more or less leglike, almost always provided with exopods. The five pairs of pereopods not chelate or subchelate, the 2nd joint normally the longest, stout or otherwise in accord with the exopodal furniture; the third joint in maxillipeds and pereopods scarcely ever elongate, sometimes

evanescent. Pairs of pleopods in the male attached to the first five, the first three, the first two, the first, or to none of the pleon segments, their structure consisting of a peduncle generally carrying two rami, which are never more than two-jointed. The much more conspicuous uropods are always present, consisting of a peduncle carrying two rami, the exopod always two-jointed, the endopod having one, two, or three joints.

Size ranging from under 2 mm to 35 mm.

The group has been variously classified, among the Amphipoda by J. C. Fabricius, the Isopoda by Lepechin, the Macrura by Pennant and Goodsir, as a larval form of Macrura by H. Milne-Edwards, Nicolet, Agassiz, and Dana, among the Schizopoda by Say, Desmarest, Latreille, Kossmann, among the (unrestricted) Stomapoda by Dé Kay, Bate, Danielssen, placed near to Mysis by Huxley, as a suborder of Mysidacea by Boas, among Branchiopoda by Latreille and Stimpson, recognised as an independent group by Kröyer, van Beneden (sessile-eyed Decapoda), Claus (between Malacostraca and Copepoda), Fritz Müller (nearer to stalk-eyed than sessile-eyed Malacostraca), Dohrn (between Edriophthalma and Mysis), Paulson, G. O. Sars, T. Stebbing, T. Scott, Zimmer, Calman and others. Dohrn finds affinity of the group with the Isopoda by the embryonal development, Delage derives it from the Tanaidae, G. O. Sars and Stappers agree in placing it between the Podophthalma and Edriophthalma, but G. O. Sars considers its approach nearer to the stalk-eyed Crustacea, and Stappers thinks that the proximity is incontestably closer to the sessile-eyed.

Distribution in all Oceans, from shore between tide-marks to great depths, Caspian Sea to mouth of the Volga.

26 Families, 62 accepted and 4 doubtful genera, 309 accepted and 23 doubtful species.

Synopsis of Families chiefly based on male specimens:

- | | | | |
|---|---|---|----------------------------------|
| 1 | { | Five pairs of pleopods in the male — 2. | |
| | { | Fewer than five pairs of pleopods in the male — 5. | |
| 2 | { | Four pairs of peraeopods in the male with exopods | 1. Fam. Vaunthompsoniidae |
| | { | Fewer than four pairs of peraeopods in the male with exopods — 3. | |
| 3 | { | Three pairs of peraeopods in the male with well developed exopods | 2. Fam. Sympodommatidae |
| | { | Fewer than three pairs of peraeopods in the male with well developed exopods — 4. | |
| 4 | { | No separate telson | 3. Fam. Bodotriidae |
| | { | Telson separate | 4. Fam. Ceratocumatidae |
| 5 | { | Three pairs of pleopods in the male — 6. | |
| | { | Fewer than three pairs of pleopods in the male — 8. | |
| 6 | { | No separate telson | 5. Fam. Leptocumatidae |
| | { | Telson separate — 7. | |
| 7 | { | First maxillae with palp | 6. Fam. Chalarostylidae |
| | { | First maxillae without palp — 8. | |

- 8 { More than one pair of peraeopods in female with exopods 7. Fam. **Paralampropidae**
 { Only the first pair of peraeopods in female with exopods 8. Fam. **Platysymphodidae**
- 9 { Pleopods in male limited to two pairs — 10.
 { Pleopods in male fewer than two pairs — 18.
- 10 { No separate telson 9. Fam. **Leuconidae**
 { Telson separate — 11.
- 11 { Uropods with three-jointed endopod — 12.
 { Uropods with fewer than three joints to the endopod — 16.
- 12 { Mandibles broad at the base 10. Fam. **Diastylodidae**
 { Mandibles narrow at the base — 13.
- 13 { Telson with only two apical spines 11. Fam. **Diastylidae**
 { Telson with fewer or more than two apical spines — 14.
- 14 { Telson small 12. Fam. **Colurostylidae**
 { Telson large — 15.
- 15 { Telson with no apical spines 13. Fam. **Oxyurostylidae**
 { Telson with three apical spines 14. Fam. **Pseudodiastylidae**
- 16 { Uropods with two-jointed endopod 15. Fam. **Ekdiastylidae**
 { Uropods with endopod simple — 17.
- 17 { Telson large with two apical spines 16. Fam. **Holostylidae**
 { Telson small with no apical spines 17. Fam. **Pseudocumatidae**
- 18 { Pleopods in male a single pair 18. Fam. **Paraleuconidae**
 { Pleopods in male wanting — 19.
- 19 { Mandibles broad at base 19. Fam. **Hemileuconidae**
 { Mandibles not broad at base — 20.
- 20 { Telson separate — 21.
 { No separate telson — 23.
- 21 { Apical spines of telson three or more 20. Fam. **Lampropidae**
 { Apical spines of telson fewer than three — 22.
- 22 { Uropods with three-jointed endopod 21. Fam. **Dicidae**
 { Uropods with endopod two-jointed or simple, telson medium 22. Fam. **Gynodiastylidae**
- 23 { Only first two pairs of peraeopods in male with exopods 23. Fam. **Heteroleuconidae**
 { First four pairs of peraeopods in male with exopods — 24.
- 24 { Mandibles with stout molar 24. Fam. **Nannastacidae**
 { Mandibles with slender molar — 25.
- 25 { Second maxilla and first maxilliped normal, second maxilliped with apical joint peculiarly dentate 25. Fam. **Procampylaspididae**
 { Second maxilla undivided, first maxilliped with reduced number of joints, second maxilliped normal 26. Fam. **Campylaspididae**

Synoptic table for female specimens.

| Telson | Apical spines on telson | Uropods. Joints of endopod | Peraeopods. Pairs with exopods | Auxiliary marks of distinction ¹⁾ | |
|--------|-------------------------|----------------------------|--------------------------------|--|------------------------------------|
| large | 3 or more | 3 | 2 + 2 r ²⁾ | | 20. Fam. Lampropidae |
| ample | 3 or more | 3 | 2 + 2 r | | 6. " Chalarostylidae ³⁾ |
| large | 3 | ? | 2 + 2 r | a. s., acc. fl. very small | 14. " Pseudodiastylidae |
| large | 3 | 3 | 2 + 2 r | mx. 1 without palp | 7. " Paralampropidae |
| large | 3 | 3 | 1 | mx. 1 without palp | 8. " Platysympodidae |
| large | 2 | 3 | 2 or 2 + 2 r | | 11. " Diastylidae |
| large | 2 | 3 | 2 | m. broad at base | 10. " Diastylodidae |
| large | 2 | 2 | 2 | | 15. " Ekdiastylidae |
| large | 2 | 1 | 2 | | 16. " Holostylidae |
| large | 0 | 3 | ? | | 21. " Dicides ⁴⁾ |
| large | 0 | 3 | 2 + 2 r | telson acute | 13. " Oxyurostylidae |
| medium | 0 or 2 r | 2 or 1 | 2 | | 22. " Gynodiastylidae |
| small | 0 | 2 or 3 | 2 + 2 r | | 12. " Colurostylidae |
| small | 0 | 1 | 2 + 2 r | branchial sacs few | 17. " Pseudocumatidae |
| small | 0 | 1 | ? | prp. 5 undeveloped | 4. " Ceratocumatidae ⁴⁾ |
| 0 | .. | 2 | 3 + r | | 5. " Leptocumatidae |
| 0 | .. | 2 | 3 | | 1. " Vaunthompsoniidae |
| 0 | .. | 2 | 3 | eyelobe linguiform | 2. " Sympodommatidae |
| 0 | .. | 2 | 3 | m. broad at base | 9. " Leuconidae |
| 0 | .. | 2 | 3 | m. broad at base | 18. " Paraleuconidae |
| 0 | .. | 2 | 3 | m. broad at base | 19. " Hemileuconidae |
| 0 | .. | 1 or 2 | 1 or 1 + 2 r | | 3. " Bodotriidae |
| 0 | .. | 1 | 2 | mxp. 2, dentate apex | 25. " Procampylaspididae |
| 0 | .. | 1 | 2 | m. molar stiliform | 26. " Campylaspididae |
| 0 | .. | 1 | 2 | m. broad at base | 23. " Heteroleuconidae |
| 0 | .. | 1 | 2 or 0 | | 24. " Nannastacidae |

1. Fam. Vaunthompsoniidae

1878 *Vaunthompsoniidae* (err. typ.), G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 465 | 1879 *Vaunthompsoniidae*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 10 | 1887 V., G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 5, 22 | 1893 V. (part.), T. Stebbing in: Int. sci. Ser., v. 74 p. 303 | 1895 V., H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c. p. 55 | 1905 *Vaunthompsoniidae*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 16, and Siboga-Exp., pars 36 p. 6, 8 | 1906 V., Calman in: Mt. Stat. Neapel, v. 17 p. 414 | 1907 V., Zimmer in: Zool. Anz., v. 31 p. 368 | 1907 V., Calman in: Tr. zool. Soc. London, v. 181 p. 28 | 1908 V., Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 164 | 1912 *Vaunthompsoniidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 133, 134.

Telson wanting. Accessory flagellum of antenna 1 very small. Antenna 2 of ♀ 2- or ?3-jointed. Palp of maxilla 1 with 2 filaments. First 4 pairs of peraeopods in ♂, first 3 in ♀, with well developed exopods. ♂ with 5 pairs of pleopods. Uropods with 2-jointed endopod.

3 genera.

¹⁾ Some of these occur spasmodically in other families.

²⁾ r., rudiment; a. s., acc. fl., accessory flagellum of antenna 1; mx., maxilla; m., mandible; prp., peraeopod; mxp., maxilliped.

³⁾ Characters of *Chalarostylis* ♀ assumed from the companion genus *Hemilamprops*.

⁴⁾ In these families the ♀ is unknown, the characters given are assumed to agree with those of the ♂.

Synopsis of genera:

- | | | | |
|---|---|--|-------------------------------|
| 1 | { | Eye present; outer apex of second joint of maxilliped | 1. Gen. Vaunthompsonia |
| | | 3 little or not produced | |
| 2 | { | Eye wanting; outer apex of second joint of maxilliped 3 much produced — 2. | 2. Gen. Gaussicuma |
| | | Pseudorostral lobes not meeting in front of the eyelobe | |
| | | Pseudorostral lobes meeting in front of the eyelobe | 3. Gen. Bathycuma |

1. Gen. **Vaunthompsonia** Bate

1858 *Vaunthompsonia* (Sp. un.: *V. cristata*), Bate MS. in: Kinahan in: Nat. Hist. Rev., v. 5 P. p. 203 | 1858 *Vaunthompsonia*, Bate in: J. R. Dublin Soc., v. 2 p. 102 | 1859 *Vaunthompsonia*, Bate in: Ann. nat. Hist., ser. 3 v. 3 p. 273 | 1863 *Vaunthompsonia* (part.), A. M. Norman in: Tr. Tyneside Club, v. 5iv p. 271 | 1879 *V.*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 11 | 1887 *V.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 22 | 1905 *Vaunthompsonia*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 16 | 1907 *V.*, Calman in: Tr. zool. Soc. London, v. 181 p. 29 | 1908 *V.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 164 | 1909 *V.*, Zimmer in: Ergeb. Schwed. Südp.-Exp., v. 6 nr. 3 p. 4 | 1911 *Vaunthompsonia*, T. Stebbing in: P. Linn. Soc. London, p. 64, 69 | 1912 *V.*, T. Stebbing in: P. Linn. Soc. London, p. 16, 78.

General form not very slender. Pseudorostral lobes nearly meeting in front of the eyelobe. Eye developed. Third maxilliped with the lateral apex of the second joint not much or not at all produced.

4 species.

Synopsis of species ♀:

- | | | | |
|---|---|---|---------------------------|
| 1 | { | Carapace of (young) female not carinate | 1. V. inermis |
| | | Carapace of female carinate — 2. | |
| 2 | { | Carina single, median, straight | 3. V. cristata |
| | | Carinae paired, submedian, curved | |
| | | | 2. V. meridionalis |

Synopsis of species ♂:

- | | | |
|---|--|-----------------------|
| { | First legs reaching more than two joints beyond carapace | 3. V. cristata |
| | First legs reaching little more than one joint beyond carapace | 4. V. arabica |

1. **V. inermis** Zimmer 1909 *V. i.*, Zimmer in: Ergeb. Schwed. Südp.-Exp., v. 6 nr. 3 p. 4 t. 1 f. 4, 5.

Near to *V. meridionalis* Sars but inferior in size, and carapace without submedian carinae and group of denticles. Eyelobe without denticles. L. ♀ with incipient marsupium about 6.5 mm.

South Georgia, outside Kochoptf Bay. Depth 24—52 m.

2. **V. meridionalis** O. Sars 1887 *V. m.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 9, 23 t. 2 f. 1—5 | 1905 *Vaunthompsonia m.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 17 | 1908 *V. m.* and *Vaunthompsonia* (laps.) *m.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 166 t. 38 f. 34, 45; t. 39 f. 46—52 | 1909 *Vaunthompsonia m.*, Zimmer in: Ergeb. Schwed. Südp.-Exp., v. 6 nr. 3 p. 4.

♀. Pseudorostral lobes reaching little beyond the eyelobe, the sinus rather deep, antero-lateral corner acute. Carapace in medio-dorsal line as long as the pedigerous segments, but the serrate lateral margin shorter than that of those segments; behind the large bidenticulate eyelobe the carapace is smooth, denticulate to the rear, between these spaces having a pair of curved denticulate carinae converging backwards. Second pedigerous segment the longest, the last three produced backward in rounded postero-

lateral lobes. Telsonic segment short, with setules on the little produced apical margin. Eye brownish. Three-jointed flagellum of first antenna as long as second joint of peduncle. Second antenna 3-jointed (Zimmer), 2-jointed (G. O. Sars). Apical points of lower lip minute. Fore part of mandible short, spine-row of 9 spines. First maxilliped with 4 branchial leaflets in a row. Third maxilliped with lateral apex of long second joint somewhat produced. First pereopod reaching apex of pseudorostrum with end of its 5th joint. Second pereopod with 3^d joint very short but distinct, 4th shorter than 5th or 7th, which are subequal. Uropods stout, peduncle as long as telsonic segment, about $\frac{4}{5}$ ^{ths} as long as the subequal rami, with about 13 spines on the medial margin; 1st joint of endopod two and a half times as long as 2nd, its medial margin fringed with unequal spines; 2nd joint of exopod fringed with short spines on lateral margin and feathered setae on the medial. Colour white with brown markings, stellate on the carapace. L. ♀ reaching 12 mm. Adult ♂ not known, young ♂ 6.5 mm.

Kerguelen Island, off Cumberland Bay, depth 232 m, Gazelle Harbour, depth 5—10 m; South Georgia, Cumberland Bay, depth 250—310 m.

3. *V. cristata* Bate 1856 *Scorpionura vulgaris*, J. V. Thompson MS. in: W. Thompson, Nat. Hist. Ireland, v. 4 p. 394 | 1858 *Vaunthompsonia cristata*, Bate in: Kinahan in: Nat. Hist. Rev., v. 5 P. p. 203 | 1858 *Vaunthompsonia c.*, Bate in: J. R.



Fig. 5.
V. cristata (♀) Bate,
antenna 1 (after Sars).



Fig. 6.
V. cristata (♀) Bate, an-
tenna 1 (after Sars), Flagella
(more magnified).



Fig. 7.
V. cristata (♀) Bate, front
(after Sars).

Dublin Soc., v. 2 p. 102 ff. | 1859 *Vaunthompsonia c.*, Kinahan in: Rep. Brit. Ass., 1858 v. 28 p. 266 | 1863 *V. c.*, A. M. Norman in: Tr. Tyneside Club, v. 5 iv p. 271 | 1879 *V. c.*, with syn. *Bodotria longipes*, Norman MS., G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 12 t. 23—26 | 1893 *V. c.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 304 | 1905 *Vaunthompsonia c.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 17 t. 1 f. 1 | 1907 *V. c.*, Calman in: Tr. zool. Soc. London, v. 181 p. 29 | 1909 *Vaunthompsonia c.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 ii p. 27.

Pseudorostral lobes meeting underneath the eyelobe, not extended beyond it; antero-lateral corners not produced in the ♂, in the ♀ acute, the

preceding emargination denticulate, the lower border of carapace for some distance backward dentate. Carapace with median carina, armed in ♀, not in ♂, with close set double row of forward pointing teeth, interrupted for a short space before its continuance to the hind margin. Five pedigerous segments conspicuous, but the 1st in ♂ laterally covered by the 2nd segment. The strongly produced telsonic segment has its broadly triangular apical margin denticulate. Eyelobe somewhat linguiform, with a pair of little apical teeth; eye dark reddish, with several corneal lenses. Antenna 1, 1st joint longest, 3^d in ♀ equal to 2nd, but shorter in ♂, flagellum rather long, with short 3^d joint, accessory minute, one-jointed. Antenna 2 of ♀ 2-jointed, with 2 plumose setae on the 1st joint, the long-jointed flagellum of ♂ not reaching far along the pleon. Apical points of lower lip conspicuous. Fore part of mandible not short, spine-row of 17 spines. First maxilliped with 5 branchial leaflets. Third maxilliped with medial margin of the long 2nd joint serrate, the lateral apex not at all produced. Peraeopod 1 as in *V. meridionalis*. Peraeopod 2 with 3^d joint distinct (Calman), wanting (Sars), 7th joint longer than the 4th or 5th, which are subequal. Pleopods of ♂ with broad peduncle, armed on medial margin with 5 coupling spines and 4 plumose setae, branches subequal, a little shorter than peduncle, 1st joint of exopod without setae, which are numerous on its 2nd joint and on the 1-jointed endopod. Uropods rather slender, peduncle as long as telsonic segment, with a dozen spines on medial margin, endopod with 2nd joint two thirds of length of the 1st, spines on medial margin of 1st 9, of 2nd, 3 or 4, exopod as long as peduncle, four-fifths of endopod, with slender spines on both margins and a very long apical spine. L. ♀ 6 mm, ♂ 5 mm.

British Isles, W. coast of France, Mediterranean. W. Indies? Surface (♂) to 36 m.

4. **V. arabica** Calm. 1907 *Vaunthompsonia a.*, Calman in: Tr. zool. Soc. London, v. 181 p. 2, 29 t. 7 f. 20—24.

♂. Very near to *V. cristata*, but with medio-dorsal line of carapace arched instead of straight, and the pleon stouter, 1st antenna with shorter and stouter peduncle, the third joint longer than the second, third maxilliped with medial margin of 2nd joint not serrate, peraeopod 1 reaching end of carapace only with end of the sixth joint, peraeopod 2 with 7th joint less slender, and the following peraeopods relatively shorter. Colour variable, patches usually on carapace, dendritic spots sometimes on sides of pleon. L. 3.1 mm.

Suez Canal; Aden.

2. Gen. **Gaussicuma** Zimmer

1907 *Gaussicuma* (Sp. un.: *G. vanhoeffeni*), Zimmer in: Zool. Anz., v. 31 p. 368 | 1912 *G.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 134.

General form slender. Pseudorostral lobes not meeting in front of the apically downbent eyeless eyelobe. Pedigerous segments each with a ventral tooth. Telsonic segment strongly produced between bases of uropods. Maxilliped 3 with 2nd joint long and distally very much produced.

1 species.

1. **G. vanhoeffeni** Zimmer 1907 *G. v.*, Zimmer in: Zool. Anz., v. 31 p. 368.

Pseudorostral lobes with apices separated from the obtuse antero-lateral corners by a deep incision. Carapace with creases on hinder part of back

and sides, a median carina doubly denticulate along anterior two-thirds of its length, with denticulate lateral branches starting at about two-thirds of the length of the frontal lobe, and two rows of denticles on each of the pseudorostral lobes, which are also denticulate on front and lower margins. First pedigerous segment short, the hinder ones narrowing gradually to the pleon. Each pedigerous segment with a median ventral tooth directed forward and 2 pairs of denticulate carinae, submedian and lateral; the former continued to end of pleon, the latter to its 5th segment; the pleon has an additional pair of lateral carinae, and the long telsonic segment has a median carina. Eyelobe with front part sharply downbent is devoid of an eye. Maxilliped 3 with lateral front corner of second joint extraordinarily produced forward. Peduncle of uropods about as long as telsonic segment; endopod over half as long as the peduncle and considerably longer than the exopod, with about 7 spines on medial margin of its 1st joint and some apical spines on the second. L. ♀ with commencing marsupium about 12 mm.

Antarctic: lat. 65° 15' S., long. 80° 34' E., depth 3423 m.

3. Gen. **Bathycuma** H. J. Hansen

1895 *Bathycuma* (Sp. un.: *B. elongata*), H. J. Hansen in: *Ergeb. Plankton-Exp.*, v. 2 G. c. p. 55 | 1905 *B.*, Calman in: *Sci. Invest. Fish. Ireland*, 1904 app. 1 p. 17 | 1905 *B.*, Calman in: *Siboga-Exp.*, pars 36 p. 9 | 1908 *B.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 164—166 | 1912 *B.*, Calman in: *P. U. S. Mus.*, v. 41 p. 614 | 1912 *B.*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 10 p. 135.

General form elongate. Pseudorostral lobes meeting in the front. First pedigerous segment short but well exposed. Telsonic segment produced between the bases of the uropods. Eye wanting. Mandible with long spinel-row. Palp of maxilla 1 with two filaments. Maxilliped 3 with lateral apex of 2nd joint distally produced, 4th joint little expanded.

5 species.

Synopsis of species:

- | | | | |
|---|---|---|----------------------------|
| 1 | { | Pleon segments multicarinate | 1. <i>B. longicaudatum</i> |
| | | Pleon segments not multicarinate — 2. | |
| 2 | { | Peduncle of uropod not longer than the exopod | 2. <i>B. brevirostre</i> |
| | | Peduncle of uropod longer than the exopod — 3. | |
| 3 | { | Pseudorostrum long | 3. <i>B. longirostre</i> |
| | | Pseudorostrum not long — 4. | |
| 4 | { | Uropods with 2 nd joint of endopod nearly as long as the 1 st | 4. <i>B. elongatum</i> |
| | | Uropods with 2 nd joint of endopod not nearly as long as the 1 st | 5. <i>B. natalense</i> |

1. *B. longicaudatum* Calm. 1912 *B. (?) longicaudata*, Calman in: *P. U. S. Mus.*, v. 41 p. 604, 614 ff. 10—13 | 1912 *B. longicaudatus*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 10 p. 135.

Pseudorostrum short, pointed, slightly upturned, angular sinus defined by blunt antero-lateral tooth. Carapace medio-dorsally arched, front half carinate with 2 rows of fine serrations more or less alternating, the carina beginning on the narrow eyeless eyelobe. Pedigerous segments 3 and 4 each with transverse ridge. The long slender pleon having on the first 5 segments dorsal, dorso-lateral and ventro-lateral pairs of ridges. The telsonic segment produced as a prominent rounded lobe between the bases of the uropods. Antenna 1 with 2nd and 3^d joints subequal, slighter than the 1st. Maxilliped 3 with lateral apex of slender 2nd joint produced nearly

to end of 4th joint. Peraeopod 1 with 3^d joint longer than broad, 5th and 7th subequal, each shorter than 6th. Peraeopod 2 with 5th joint longer than 4th, 7th than 5th. Peduncle of uropods subequal to telsonic segment, probably longer than endopod. L. ♀ immature 18.5 mm.

Off San Diego (California). Depth 1174—1218 m.

2. **B. brevirostre** (Norm.) 1879 *Leucon brevirostris*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 71 | 1896 *Vaunthompsonia caeca*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 536 t. 28 f. 3a—s | 1905 *Bathycuma brevirostris*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 18 | 1908 *B. (Vaunthompsonia?) b.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 165, 166 | 1912 *B. b.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 135.

♀. Pseudorostrum very short, broad, rounded, edge minutely serrate (Norman), upper margin horizontal, without serrations (Calman), antero-lateral angle greatly produced, acute. Carapace once and two thirds as long as deep, widest behind the middle, medio-dorsal line gently arched, its numerous denticles in an irregularly double alternating line. Maxilliped 1 in ♂ with 5 branchial leaflets on the epipod. Maxilliped 3 with row of strong teeth on lower surface of 2nd joint of which the apex reaches end of 4th joint and carries setae reaching end of 6th joint. Peraeopod 1 long, slender, 2nd joint strongly spined, 5th and 7th joints each $\frac{2}{3}$ ^{ds} as long as the 6th. Peraeopod 2 with 4th joint longer than 5th, 7th than 4th. Peduncle of uropods subequal to endopod with 5 spines on medial margin in ♀, 7 in ♂, 10 spines on medial margin of endopod's 1st joint, 5 on the 2nd which is nearly $\frac{2}{3}$ ^{ds} as long as the 1st; exopod a little longer than the endopod. L. about 10 mm.

S. of Rockall, lat. 56° 26' N., long. 14° 28' W., depth 205 m; 77 miles W. N. W. of Achill Head, county Mayo, Ireland, depth 699 m; Bay of Biscay, depth 350—1710 m; Mediterranean, depth 950—1100 m.

3. **B. longirostre** Calm. 1905 *B. longirostris*, Calman in: Siboga-Exp., pars 36 p. 2, 9 t. 2 f. 13, 14 | 1908 *B. (Vaunthompsonia?) l.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 166 | 1912 *B. l.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 135.

Pseudorostrum long, about $\frac{1}{5}$ th of length of carapace, horizontal, acute, the sinus nearly semicircular, antero-lateral angle acute. Carapace nearly thrice as long as wide, and more than twice as long as deep, its medio-dorsal line rather convex, sharply carinate, with double row of alternating teeth, the eyeless eyelobe narrowly wedge-shaped. Fourth pedigerous segment with sideplates produced forwards as narrowly rounded lobes. Pleon rather long and stout, smooth, telsonic segment produced as a prominent rounded lobe between the bases of the uropods. Antenna 1 with last joint of peduncle slightly swollen, flagellum 2-jointed, 1st joint twice as long as 2nd, accessory 2-jointed, very short. Maxilliped 3 with a few teeth distally on the 2nd joint, of which the serrate setose apex reaches end of the 4th joint. Peraeopod 1 with 2nd joint strongly denticulate, 7th joint longer than 5th, a little shorter than the 6th. Peraeopod 2 with 2nd joint very short, 7th long and slender. Peraeopods 3 and 4 subequal in length, but exopod of 3^d equal to that of 2nd and nearly double that of the 4th. Peduncle of uropods subequal in length to telsonic segment, with 13 unequal spines on the medial margin; exopod about $\frac{2}{3}$ ^{ds} as long as the peduncle, with spinules on lateral margin and long setae on the medial; endopod a very little shorter, its first joint not much longer but much stouter than the second, each with 9 spines of varying length on the medial edge. L. ♂ (immature) 12 mm.

Lat. 5° 40' 7" S., long. 120° 45' 5" E. (Malayan Archipelago), depth 1158 m.

4. **B. elongatum** H. J. Hansen 1895 *B. elongata*, H. J. Hansen in: *Ergeb. Plankton-Exp.*, v. 2 G. c. p. 57 t. 6 f. 6, 6a, b; t. 7 f. 1, 1a—e | 1905 *B. e.*, Calman in: *Sci. Invest. Fish. Ireland*, 1904 app. 1 p. 18 | 1908 *B. e.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 165, 166 | 1912 *B. elongatus*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 10 p. 135.



Fig. 8.
B. elongatum Hansen,
mandible.

Body very elongate. Pseudorostrum acute, a little depressed, antero-lateral corners acute, lower margin for some distance serrate. Carapace nearly twice as long as deep, strongly compressed, with a serrate carina only on the front third portion. Pedigerous segments and pleon not carinate, second segment of pleon notably shorter than 1st or 3^d; telsonic segment produced in semi-oval shape between bases of uropods. Eye wanting. Antenna 1 with 1st joint dentate, 3^d longer than 2nd, flagellum 2-jointed, 1st joint rather longer than 2nd, the accessory minute, but also 2-jointed. Antenna 2 with 4 plumose setae. Mandibles elongate, the basal part shorter than that beyond the molar, spine-row of 17 spines. Maxilla 1 with dilated hook-like end to the longer filament on the palp. Maxilliped 1 broad, a longitudinal series of 8 branchial leaflets on the epipod. Maxilliped 2 extremely slender. Maxilliped 3 with 2nd joint twice as long as rest of limb, but produced apex not quite reaching apex of 4th joint, which distally carries a submarginal row of teeth. Peraeopod 2 as described differing from other species of the genus by absence of the third joint. Peduncle of uropods longer than

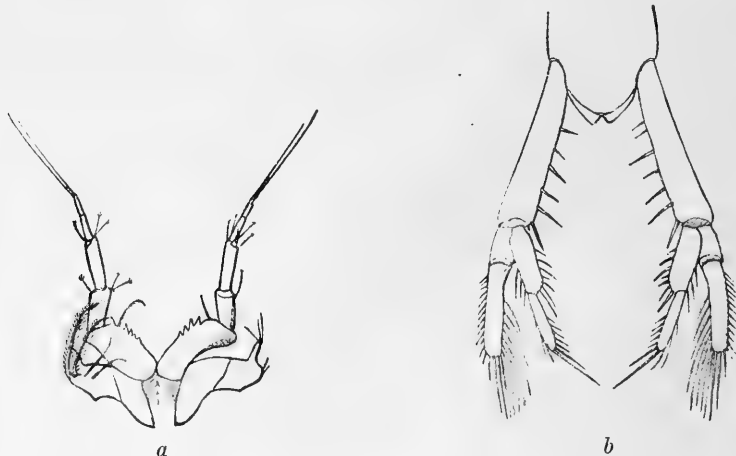


Fig. 9.
B. elongatum Hansen. *a* antenna 1 and 2, *b* telson and uropods.

the equal stout rami, exopod with 13 spines on lateral margin, 3 at apex, and 7 or 8 plumose setae on medial margin, endopod with 7 unequal spines on medial margin and apex of 1st joint, and on the slightly shorter but much narrower 2nd joint 5 small spines to the medial margin and 2 long on the apex. Colour clear greyish. L. ♀ (not fully adult) 12.5 mm.

Lat. 18° 6' N., long. 26° W. (North Atlantic), depth 4980 m.

5. **B. natalense** Stebb. 1912 *B. natalensis*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 10 p. 135 t. 49.

Pseudorostrum acute, slightly upturned, the lobes meeting for a short distance in front of the little triangular eyeless eyelobe. Carapace about a quarter of the body's total length, rough with minute denticles, the medio-dorsal line carinate, the first 3^d showing spinules in double line, commencing on the eyelobe and fading away into a single line towards or to the hind margin. 1st pedigerous segment seemingly united to the carapace. Pleon segments 1—5 with lower borders flattened; telsonic segment produced between bases of uropods to an almost semicircular partially serrate border. Antenna 1 with 1st joint geniculate, 3^d joint longer than 2nd, 1st joint of the 2-jointed flagellum dilated near the base and fringed with long filaments, the minute 2-jointed accessory having a close-set fascicle of very long setae. Mandibles with spine-row of 21 spines, but basal part of trunk longer than the distal section. Maxilliped 1 with 8 branchial leaflets in longitudinal series on the epipod. Maxilliped 3 with apex of 2nd joint well produced and serrate on the medial margin. Peraeopod 2 with short 3^d joint, the spinose 7th as long as 5th and 6th joints combined. Pleopods with peduncle little longer than the subequal setose rami. Exopod of uropod about $\frac{3}{4}$ ^{ths} of the length of the spinose peduncle, with 8 spines on the medial margin, endopod scarcely shorter, with 21 spines on medial margin of the 1st joint, 2nd joint much thinner, more than half as long, with a dozen little spines on the medial margin. L. ♂ 11 mm.

S. Africa, Cape Natal N. by E. 24 miles, depth 805 m.



Fig. 10.

B. natalense Stebbing, mandible.

2. Fam. **Sympodommatidae**

1912 *Sympodommatidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 131, 133, 138.

Telson wanting. Accessory flagellum of antenna 1 very small. Antenna 2 of ♀ 2-jointed. Palp of maxilla 1 with 2 filaments. First 3 pairs of peraeopods in ♂ and ♀ with well developed exopods. ♂ with 5 pairs of pleopods. Uropods with 2-jointed endopod.

1 genus.

1. Gen. **Sympodomma** T. Stebbing

1912 *Sympodomma*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 138.

General form slender, elongate, width diminishing gradually from carapace to pleon. Eyelobe narrowly linguiform, separating the pseudorostral lobes, in which the sinus is well defined by the produced antero-lateral angle. All five pedigerous segments dorsally exposed, the first short. Pleon elongate; telsonic segment produced between the bases of the uropods. First antenna with both flagella slight. Third maxillipeds with second joint distally much produced, fifth not distally widened. First three pairs of peraeopods in both sexes with, fourth and fifth pairs without, exopods.

4 species.

Synopsis of species:

- | | | | |
|---|---|--|-----------------------|
| 1 | { | Crest of carapace without prominent teeth | 1. S. weberi |
| | | Crest of carapace with prominent teeth — 2. | |
| 2 | { | Crest of carapace with four prominent teeth | 2. S. anomalum |
| | | Crest of carapace with only three prominent teeth — 3. | |

- 3 { Endopod of uropod shorter than exopod, its joints subequal . . . 3. *S. diomedea*
 { Endopod of uropod longer than exopod, second joint much
 the shorter 4. *S. africanum*

1. *S. weberi* (Calm.) 1905 *Heterocuma*(?) *w.*, Calman in: Siboga-Exp., pars 36 p. 6 t. 1 f. 7—12 | 1912 *H. w.*, Calman in: P. U. S. Mus., v. 41 p. 613 | 1912 *Sympodomma w.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 138.

Pseudorostral lobes slightly upturned, apices bluntly rounded, not reaching beyond eyelobe. Antero-lateral corners in ♂ obtuse. Carapace short, surface anteriorly beset with forward directed spiniform points, anterior half with medio-dorsal carina. Pedigerous segment 1 strap-like, 3^d and 4th laterally articulated, 3^d to 5th faintly showing the three pairs of ridges, dorsal, dorso-lateral, and lateral, better developed on the first 5 pleon segments, on the 5th the lateral joining the dorso-lateral at about the middle of the segment. The telsonic segment with some ridges and a dorsal depression is squarely produced between the uropods. Eyelobe narrowly linguiform, slightly expanded at apex, with 2 large but indistinct corneal areas. Antenna 1, 1st and 3^d joints longer than 2nd, flagellum of 3 joints, 1st in ♂ dilated at base with brush of sensory filaments; accessory of 2 joints, 1st dilated, also with brush of shorter filaments. Maxilliped 3, 2nd joint very much longer than rest of limb, apically produced to denticulate apex of little produced 4th joint. Peraeopod 1 elongate, 2nd joint long, but shorter than rest of limb, 7th joint long, but shorter than 6th. Peraeopod 2, with 3^d joint distinct but very short. Exopod of peraeopod 3 slightly smaller than that of two preceding pairs. Pleopods large, rami of 1st pair about two-thirds of length of peduncle. Peduncle of uropods much longer than exopod, in which the 1st joint is subequal to 2nd of endopod, the 2nd longer than the 1st of endopod, which is about once and a half as long as its own 2nd joint. L. ♂ 28.6 mm. ♀ unknown.

Lat. 5° 40'7" S., long. 120° 45'5" E., (Malayan Archipelago) depth 1158 m.

2. *S. anomalum* (O. Sars) 1871 *Leucon anomalus*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 6 p. 805 | 1873 *L. a.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 5 p. 11 t. 3 f. 10—13 | 1879 *Vaunthompsonia anomala*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 12 | 1887 ? *V. a.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 22 | 1893 ? *V. a.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 304 | 1912 *Sympodomma anomalus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 138.

Pseudorostral lobes extended along the eyelobe to its extremity; antero-lateral corners acutely produced; behind these the lower margin of the carapace for some distance minutely denticulate. Carapace much narrowed in front; medio-dorsal line carinate, strongly in first half, there carrying 4 strong teeth, 1st behind the eyelobe, 4th a little in advance of the centre. Pedigerous segment 1 strap-shaped, not overlapped by the larger 2nd segment. Pleon segments 1—5 cylindrical. Telsonic segment pentagonal with rounded apex, the sides between the uropods having each a series of 6 or 7 minute spinules. Eyelobe narrowly linguiform, slightly expanded at apex and ending in 2 little divergent teeth much as in *Vaunthompsonia cristata* (p. 10), character of eye uncertain. Antenna 1, 2nd and 3^d joints subequal, accessory flagellum obsolete. Maxilliped 3 as in *Leucon*. Peraeopod 2 with 3^d joint said to be missing. Peduncle of uropods a little longer than the rami, flattened, medial margin carrying 5 large and 3 little spines; endopod shorter than exopod, its 1st joint with 10 spines, 2 longer than the rest, 2nd joint not shorter but much narrower with 10 spines. L. ♀ juv. about 8 mm. ♂ unknown.

West Indies, St. Martin; depth 377—565 m.

3. **S. diomedae** (Calm.) 1912 *Heterocuma d.*, Calman in: P. U. S. Mus., v. 41 p. 612 tf. 6—9 | 1912 *Sympodomma d.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 138.

Pseudorostral lobes separated by the linguiform eyelobe; an angular antennal sinus formed by blunt moderately projecting antero-lateral angle, followed by serration of lower margin anteriorly. Carina on frontal lobe surmounted by 3 large forward pointing teeth, to which succeed a pair of adjacent tuberculated ridges, sides of carapace dotted with rounded tubercles. First pedigerous segment overlapped by sides of second, this and the 3 following segments having each a median pair of adjacent ridges, and to these are added on the last three a dorso-lateral pair. Both pairs are continued on the pleon segments, but become less distinct towards the last of them. The third and fourth pedigerous segments in the male have each a ventral spine, found also in the female on the fourth. A pigmented eye occupies the apex of the eyelobe. The first peraeopods have the sixth joint not twice as long as the fifth, and nearly a third longer than the seventh. In both sexes the first three pairs of peraeopods have well developed exopods. Peduncle of uropods, fringed with a mixture of long and short spines, is nearly twice as long as the endopod, of which the 2 subequal spinose and setose joints are together rather shorter than the exopod. L. ♀ immature, 14.3 mm.

Off Ose Zaki, Honshu Island, Japan; depth 110—128 m.

4. **S. africanum** Stebb. 1912 *S. africanus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 138 t. 50 (2).

Pseudorostral lobes, eyelobe, and frontal lobe as in the preceding species, but the 3 large teeth are succeeded by a single carina, not tuberculate, nor have the sides of the carapace tubercles, except a single pair anteriorly outside the frontal lobe. The pedigerous segments and pleon are in near agreement also with those of *S. diomedae*, but no ventral spine was found on the third or fourth pedigerous segment. The apex of the eyelobe is pellucid, apparently occupied by numerous small lenses. The first antenna has a geniculate first joint as long as the subequal second and third joints combined; the minute 2-jointed accessory flagellum is shorter than the first joint of the primary. First maxilla with elongate palp; second normally armed, unusually long. Second maxilliped with long and slender second joint. The long first peraeopods have the sixth joint less than twice the fifth and not a fourth longer than the seventh. The short second pair have the 6th joint not longer than the third, the seventh as long as fifth and sixth combined. Exopods on the third peraeopods not clearly made out. Peduncle of uropods carinate, fringed with unequal spines; the endopod about two-thirds as long as peduncle, a little longer than the exopod, its long first joint about twice as long as the second. L., ♂ subadult, 18 mm.

South Africa, Cape Point E. by N. 29 miles.

Fig. 12.

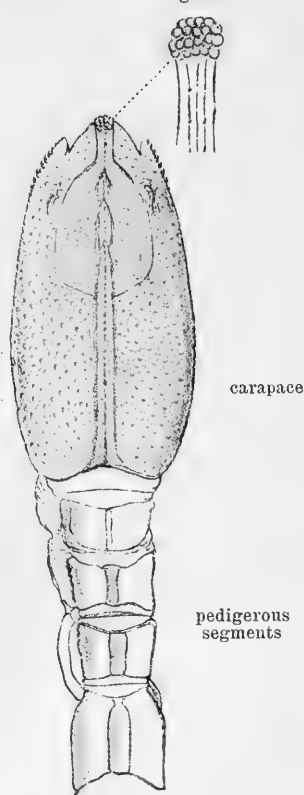


Fig. 11.

S. africanum Stebbing, with eye (Fig. 12).

3. Fam. **Bodotriidae**

1853 *Cumadae* (part), T. Bell, Brit. stalk-eyed Crust., p. 321 | 1856 *Diastylidae* (part.), Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 449 | 1863 *D.* (part), A. M. Norman in: Tr. Tyneside Club, v. 5iv p. 271 | 1879 *Cumidae*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 465, 467 | 1887 *C.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 5, 11 | 1893 *C.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 301 | 1896 *C.*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 530 | 1900 *C.*, Zimmer in: Fauna arctica, v. 1 p. 414, 431 | 1901 *Bodotriidae*, T. Scott in: Rep. Fish. Board Scotl., v. 19 p. 273 | 1907 *B.*, Calman in: Tr. zool. Soc. London, v. 181 p. 3 | 1908 *B.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 159 | 1910 *B.*, T. Stebbing in: Ann. S. Afr. Mus., v. 6iv p. 409 | 1912 *B.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 131, 133, 140.

Telson wanting. Accessory flagellum of antenna 1 very small or obsolete. Antenna 2 of female 1- or 2-jointed. Palp of maxilla 1 ending in 2 filaments or a single filament. Peraeopods with exopods only on the 1st pair or also with rudiments on the 2nd and 3^d pairs in both sexes. Five pairs of pleopods in the male. Uropods with the endopod 2-jointed or simple.

9 genera.

Synopsis of genera:

- | | | | |
|---|---|---|-----------------------------|
| 1 | { | With fewer than 5 free pedigerous segments — 2. | |
| | { | With 5 free pedigerous segments — 5. | |
| 2 | { | With only 2 free pedigerous segments | 1. Gen. Cyclaspoïdes |
| | { | With only 3 or 4 free pedigerous segments — 3. | |
| 3 | { | Carapace with lateral cornua | 2. Gen. Eocuma |
| | { | Carapace without lateral cornua — 4. | |
| 4 | { | Peraeopod 2 with 3 ^d joint obsolete | 3. Gen. Bodotria |
| | { | Peraeopod 2 with 3 ^d joint not obsolete | 4. Gen. Cyclaspis |
| 5 | { | Without distinct pseudorostral lobes; endopod of uropod simple | 5. Gen. Stephanomma |
| | { | With pseudorostral lobes; endopod of uropod 2-jointed — 6. | |
| 6 | { | With 2 separated branchial siphons | 6. Gen. Zygosiphon |
| | { | With branchial siphon simple — 7. | |
| 7 | { | Second and third peraeopods without exopods . . . | 7. Gen. Iphinoë |
| | { | Second and third peraeopods with 1-jointed exopods — 8. | |
| 8 | { | Maxilliped 3, 2 nd joint distally produced, 5 th distally widened | 8. Gen. Heterocuma |
| | { | Maxilliped 3, 2 nd joint not distally produced, 5 th not distally widened | 9. Gen. Cumopsis |

1. Gen. **Cyclaspoïdes** Bonnier

1896 *Cyclaspoïdes* (part.), J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 530 | 1904 *C.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 161 | 1905 *C.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 15 | 1905 *C.*, Calman in: Siboga-Exp., pars 36 p. 6.

Carapace without lateral cornua. First three pedigerous segments fused with the carapace. Second peraeopod 6-jointed. Other characters as in *Cyclaspis* (p. 28).

1 species.

1. **C. sarsi** Bonnier 1896 *C. s.*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 530 t. 28 f. 1a—u | 1904 *C. sarsii*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 161 | 1905 *C. sarsi*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 15 | 1905 *C. s.*, Calman in: Siboga-Exp., pars 36 p. 6.

Pseudorostrum acute, with antero-lateral corner rounded; denticulate. Carapace a little compressed laterally in front, to the rear embracing the first three pedigerous segments, with one dorsal suture or none. Intestine anteriorly coiled, as in *Platycuma holti*. Body without spinose armature. Telsonic segment subequal in length to the preceding, well produced between the uropods. Eye wanting. Antenna 1 very short, its single flagellum consisting of 2 very small joints. Spine-row of mandible of 15 components. Palp of maxilla 1 ending in a single filament. Exopod of maxilliped 1 very elongate. Maxilliped 3 with 2nd and 4th joints produced along lateral margin of 3^d and 5th respectively. Peraeopod 1 with joints 5—7 subequal. Peraeopod 2 6-jointed, small. Pleopods 1—5 ♂ with rami as long as the peduncle. Uropods with peduncle slightly shorter than exopod, equal to endopod, which has 5 spines on medial margin and 2 apical. L. 5 mm.



Fig. 13.

C. sarsi Bonnier (♂ juv.).

Bay of Biscay, depth 950 m; 77 miles W.N.W. of Achill Head, Ireland, depth 698 m; ? lat. 5° 46' 7" S., long. 134° 0' E. (Malayan Archipelago), depth 1788 m in atrial cavity of Ascidian.

2. Gen. *Eocuma* Marcusen

1894 *Eocuma* (Sp. un.: *E. hilgendorfi*), Marcusen in: Hilgendorf in: SB. Ges. Fr. Berlin, p. 170 | 1894 *E.*, Hilgendorf in: SB. Ges. Fr. Berlin, p. 171 | 1903 *E.*, Zimmer in: Zool. Jahrb., Syst. v. 18 p. 669 | 1904 *E.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 160 | 1907 *E.*, Calman in: Bull. Mus. Paris, p. 121 | 1907 *E.*, Calman in: Tr. zool. Soc. London, v. 181 p. 20.

Carapace broad in ♀, usually narrow in ♂, with projecting lateral cornua in both sexes. First pedigerous segment and at least sometimes the second firmly united with the carapace. Antenna 1, accessory flagellum very small or obsolete. Antenna 2 of ♀ with or without a minute 2nd joint. Peraeopod 1 with 2nd joint distally produced acutely forward or inward. Peraeopod 2 6-jointed. Uropods with peduncle much shorter than the subequal rami, endopod 1-jointed.

For mouth-organs see *E. taprobanicum* (nr. 2) and *E. jerox* (nr. 8).

9 species.

Synopsis of species:

- 1 { Lateral borders of carapace carinate — 2.
Lateral borders of carapace not carinate — 7.
- 2 { Carapace of ♀ not narrowed to the rear; pedigerous segment 2 fused, dorsally unsutured 1. *E. dollfusi*
Carapace of ♀ narrowed to the rear; pedigerous segment 2 free or dorsally sutured — 3.
- 3 { Carapace without paired dorsal ridges — 4.
Carapace with paired dorsal ridges — 5.
- 4 { Peduncle of antenna 1 not elongate; pleon segment 5 ♂ distally narrowed 2. *E. taprobanicum*
Peduncle of antenna 1 elongate; pleon segment 5 ♂ not distally narrowed 3. *E. longicorne*

- | | | | |
|---|---|--|--------------------------|
| 5 | { | Antero-lateral teeth separated from the cornua by a deep cavity | 4. <i>E. hilgendorfi</i> |
| | | Antero-lateral teeth separated from the cornua by nearly straight margin — 6. | |
| 6 | { | Peraeopod 1, joint 2 distally produced inwards, 5th more than twice as long as 7th | 5. <i>E. stelliferum</i> |
| | | Peraeopod 1, joint 2 distally produced forwards, 5th much less than twice 7th | 6. <i>E. latum</i> |
| 7 | { | Pseudorostral lobes not projecting beyond the cornua . . . | 7. <i>E. sarsii</i> |
| | | Pseudorostral lobes projecting beyond the cornua — 8. | |
| 8 | { | Carapace of ♂ not nearly twice as long as broad | 8. <i>E. ferox</i> |
| | | Carapace of ♂ nearly twice as long as broad | 9. <i>E. affine</i> |

1. *E. dollfusi* Calm. 1907 *E. d.*, Calman in: Bull. Mus. Paris, p. 119 tf. 2—4.

Pseudorostrum apically emarginate in dorsal view, sides gently convex. Carapace not much longer than broad, leaving free only 3 pedigerous segments, the lateral cornua not level with apex of pseudorostrum, lateral margin behind them carinate, and breadth slightly increased. Pedigerous segment 2 slightly detached from carapace at sides only. Pleon slender, smooth like the rest of the body, telsonic segment shorter than the preceding. Eyelobe small, without pigment. Peraeopod 1 short, 2nd joint longer than the remaining 5 combined. Uropods with rami almost 3 times as long as the peduncle. L. ♀ 6.45 mm (specimens not adult).

Coasts of France, Bay of Biscay, Turbelle, in the sand; the Channel, Villers-sur-Mer, in the sand.

2. *E. taprobanicum* Calm. 1904 *E. taprobanica*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 161 t. 1 f. 1—20; t. 2 f. 21—28 | 1907 *E. t.*, Calman in: Tr. zool. Soc. London, v. 181 p. 20.

Pseudorostrum apically notched in dorsal view, sides sinuous, extending much beyond the small incurved lateral cornua. From these the greatest breadth of the carapace diminishes to the base greatly in ♀, moderately in ♂, the sides sharply inflected, with oblique ridge running from the cornua to the free margin of the flattened ventral surface; a slight medio-dorsal ridge is more prominent anteriorly in ♀, posteriorly in ♂. First pedigerous segment not distinguished from carapace unless by faint dorsal marking, 2nd fused but with complete suture. Pleon much more slender in ♀ than in ♂, 5th segment longer than 6th, its width in ♂ abruptly decreasing at middle. Eye with 3 corneal lenses, larger in ♂. Antenna 1 with 1st joint angularly bent, third longer than 2nd, shorter than 1st, flagellum 2-jointed in ♀, 3-jointed in ♂. Antenna 2 ♀ a rounded nodule bearing 2 plumose setae. Lower lip with broadly rounded lobes. Maxilla 1 with 2 apical filaments on palp. Maxilliped 1, exopod normal, epipod with branchial sacs in straight line, 22 in ♀, 33 more elongate in ♂. Maxilliped 2 with 3^d joint distinct though small. Maxilliped 3, 2nd joint greatly produced outside the 3^d and 4th, 3^d unusually large, in figure longer than the 4th, 4th produced along lateral margin of the narrow 5th. Peraeopod 1 long, 2nd joint abruptly narrowed distally and apically produced, acutely on the medial edge beyond the third joint. Peraeopod 2 the shortest, its 3^d joint suppressed, the 4th apically produced and tipped with a long spine. Peduncle of uropod less than half as long as the subequal rami, both minutely knobbed at apex, endopod in ♀ with a few plumose setae and spinules on medial margin, in ♂ densely set

with plumose setae on medial margin, as on the peduncle. L. ♀ subadult 11.1 mm, ♂ adult 9.3 mm.

Gulf of Manaar. Depth 11—16 m.

3. ***E. longicorne*** Calm. 1907 *E. longicornis* + *E. producta*, Calman in: Tr. zool. Soc. London, v. 181 p. 20 t. 6 f. 1—6; p. 20, 24 t. 6 f. 18—20.

Pseudorostrum with rounded apices, sides slightly convex, extending much beyond the small lateral cornua, which are directed outwards in ♂, forwards in immature ♀. From these the breadth of carapace diminishes very gradually backward, the sides clearly carinate, transverse ridge from the cornua not reaching the ventral margin, medio-dorsal ridge partial and faint. A well marked suture distinguishes 2nd pedigerous segment from carapace. Pleon segment 5 longer than the following segment, its sides parallel. Eye with 3 corneal lenses. Antenna 1, peduncle long, 3^d joint much longer than 2nd, a little longer than 1st, flagellum 3-jointed in ♂. Peraeopods and uropods nearly as in *E. taprobanicum*. L. 7.65 mm adult ♂, 4.6 mm immature ♀.

Suez (♂), Penang (♀).

4. ***E. hilgendorfi*** Marcusen 1894 *E. h.*, Marcusen in: SB. Ges. Fr. Berlin, p. 170 | 1894 *E. h.*, Hilgendorf in: SB. Ges. Fr. Berlin, p. 171 | 1903 *E. h.*, Zimmer in: Zool. Jahrb., Syst. v. 18 p. 669 tf. D—H | 1904 *E. h.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 161 | 1907 *E. h.*, Calman in: Tr. zool. Soc. London, v. 181 p. 20.

Pseudorostrum having outwardly directed antero-lateral processes level with the apices but separated from them by shallow emarginations, much in advance of the incurved lateral cornua which are separated from them by deep cavities. Greatest breadth of the much depressed carapace subequal to the length, with sinuous sides gradually diminishing backwards. A slight median carina runs from the eye-lobe to past the middle of the telsonic segment. The frontal lobe ends on each side in a pit-like depression from which runs a longitudinal carina to the end of the third pedigerous segment. The first pedigerous segment is dorsally indicated by a line on the carapace, the 2nd, though ventrally separate in the ♀, is dorsally distinguished only by a faint suture. Eye with 3 corneal lenses. The 3^d maxilliped and peraeopods 1 and 2 are apparently in near agreement with those of *E. taprobanicum* (nr. 2). Peduncle of uropods only a little over one-third the length of the subequal rami. L. about 10 mm, specimens perhaps not full-grown.

Enosima (Japan), depth 6—23 m.

5. ***E. stelliferum*** Calm. 1907 *E. stellifera*, Calman in: Tr. zool. Soc. London, v. 181 p. 20, 23 t. 6 f. 13—17.

Pseudorostrum with acute antero-lateral processes on a level with the obtuse apices but separated from them by 2 small unequal emarginations. The divergent sides lead straight back to the incurved cornua, and thence the carinate sides of the carapace slope rapidly backward to the narrow hind margin. The medio-dorsal carina is only apparent to the rear, and the flanking dorso-lateral carinae are not strongly marked. Under moderate magnification the carapace appears covered with stellate clear spots, to which the specific name refers. Eye showing no lenses or pigment. Antenna 1 with 1st joint longer than 2nd and 3^d combined, 3^d longer than 2nd. Peraeopod 1 very long and slender, 2nd joint with long acute distal process directed obliquely inwards, this joint not longer than the 5th which is longer than the 6th and

more than twice as long as the 7th. Peduncle of uropods little more than a third of the length of the subequal rami. L. 5.6 mm. ♀ immature.

Gulf of Siam, depth 15—28 m.

6. *E. latum* Calm. 1907 *E. lata*, Calman in: Tr. zool. Soc. London, v. 181 p. 20, 22 t. 6 f. 7—12.

Pseudorostrum with acute antero-lateral processes not quite on a level with the rounded apices and separated from them by an emargination, the sides diverging straight from the processes to the acute forward-directed lateral cornua. From these the carinate sides of the depressed carapace slope rapidly backward to the narrow hind margin. No distinct median carina, but dorso-lateral carinae from ends of frontal lobe to the hind margin well marked. Transverse ridge from a little behind the cornua reaches the free ventral margin of the carapace. Eye showing no lenses or pigment. Antenna 1 with 1st joint longer than 2nd and 3^d combined, 3^d longer than 2nd. Peraeopod 1 not very long, 2nd joint the longest, its distal process directed forwards, 5th and 6th joints equal, each less than one-third longer than the 7th joint. Uropods as in *E. stelliferum*. L. 3.9 mm. ♀ immature.

Gulf of Siam, depth 9—19 m.

7. *E. sarsii* (Kossm.) 1880 *Cyclaspis* s., Kossmann, Reise Roth. Meer., Malacost. pars 2 p. 88 t. 4 f. 3 | 1901 *Cyclaspoides cornigera* (err., non G. O. Sars 1879), A. O. Walker in: J. Linn. Soc. London, v. 28 p. 294 | 1904 *Eocuma sarsii*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 162, 166 t. 2 f. 35—38 | 1907 *E. s.*, Calman in: Bull. Mus. Paris, p. 120 tf. 5 | 1910 *E. s.*, T. Stebbing in: Ann. S. Afr. Mus., v. 6 iv p. 414; in: Mar. Invest. S. Afr., Crustacea, pars 5.

Pseudorostrum with broadly truncate apices level with or a little in advance of the stout curved lateral cornua, an intervening rectangular process being separated from the apices by a shallow emargination and from the cornua by a semicircular cavity. From the cornua the rounded sides of the pitted and tuberculate carapace converge only slightly to the rather broad hind margin, near to which are a pair of bosses; the median carina on the front half is succeeded by a submedian pair of ridges on the hind part. The 2nd pedigerous segment is much lower than the carapace, the 4th and 5th have each 2 dorsal tubercles. All the segments of the stout pleon have a prominent medio-dorsal carina. Eye of three corneal lenses. Peraeopod 1 has the 2nd joint about two-thirds as long as the remaining joints combined and

Fig. 14.
E. sarsii (♂) (Kossmann).

is apically produced forwards; the 5th joint is a little longer than the 6th and nearly twice as long as the 7th. Peraeopod 2 has no spine on the apex of the 4th joint. Peduncle of uropods has two oblique ridges on the dorsal surface and is about half as long as the rami. L. 9 mm ♂.

Red Sea; Gulf of Manaar, depth 13 m; Mediterranean, Cannes, depth 27—36 m.

8. *E. ferox* (P. Fisch.) 1872 *Bodotria* f., P. Fischer in: Folin & Périer, Fonds Mer, v. 2 p. 47 t. 1 f. 4 | 1873 *B. f.*, P. Fischer in: Act. Soc. Linn. Bordeaux, ser. 3 v. 8 v p. 424 |

1878 *Cyclaspis cornigera*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 488 t. 7—9 | 1887 *C. c.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 12 | 1896 *Cyclaspoides ferox*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 533 | 1904 *Eocuma f.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 161, 162.

Pseudorostrum with obtuse apices and antero-lateral angle slightly expressed in advance of the strong laterally divergent and apically incurved cornua. Behind these the stiff very spinulose carapace is a little constricted, and then continued with non-carinate lateral borders to the broadly rounded hind margin which appears truncate in lateral view. The 2nd pedigerous segment is much lower than the carapace. The whole body is spinulose in the ♀, but only faintly so in the ♂. The pleon is long and especially in the ♀ very slender. In the ♂ the 5th segment is narrowed rather abruptly in the distal half. Eye with distinct pigment and the corneal lenses (as figured by G. O. Sars) more than 3. Antenna 1, 3^d joint as long as 1st, much longer than 2nd, both flagella 1-jointed, the accessory very small but distinct. Antenna 2 in ♀ with 1st joint angularly bent, carrying laterally 2 small plumose setae, and succeeded by a minute setuliferous 2nd joint; in ♂ the flagellum reaching beyond the uropods. Mouth-organs in near agreement with those of *E. taprobanicum* (nr. 2), but in maxilliped 3 the 3^d joint is much shorter than the 4th. Peraeopod 1, 2nd joint large, strong, spinulose, nearly as long as the 5 remaining joints combined, its forward extended triangular apex overlapping the 3^d joint, 5th and 6th joints longest of the 5, subequal, not specially long. The small 6-jointed 2nd peraeopod has a long spine at apex of the 4th joint, in this species the 3^d joint being present and the 7th suppressed. Peduncle of uropods a little less than half as long as the subequal rami, with 3 plumose setae on its medial margin, 7 on that of the endopod in the ♀, these margins thickly set with setae and spines in the ♂. Colour dusky in ♀, lighter in ♂. L. ♀ 5 mm, ♂ 6·8 mm.

Bay of Biscay, Cap Breton, depth 6·5 m; harbour of Bayonne; Mediterranean, Goletta, depth 4—9 m.

9. **E. affine** Calm. 1904 *E. affinis*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 162, 165 t. 2 f. 29—34.

Only ♂ known. The affinity is with *E. taprobanicum* (nr. 2), but differing in the narrower and less depressed form of the carapace, which has the lateral borders nearly parallel, not carinate. There is a transverse dorsal depression behind the frontal lobe. Peraeopod 1 has the 2nd joint narrower and the spines on its lower surface more numerous, the 7th joint only half as long as the sixth. Peraeopod 2 has the spine on the produced 4th joint less extended. Peduncle of uropods nearly one-third of the length of the rami. L. adult ♂ 6·7 mm.

Gulf of Manaar, depth 13 m.

3. Gen. **Bodotria** Goodsir

1828 *Cuma* (non [Calonne] 1797, Mollusca), H. Milne-Edwards in: Ann. Sci. nat., v. 13 p. 287 | 1831 *C.*, Latreille, Cours Ent., v. 1 p. 416 | 1840 *C.*, H. Milne-Edwards, Hist. nat. Crust., v. 3 p. 553 | 1841 *C.* (part.), Kröyer in: Naturh. Tidsskr., v. 3 vi p. 503 | 1843 *C.* (part.) + *Bodotria*, Goodsir in: Edinb. new phil. J., v. 34 p. 120, 127 | 1856 *C.* + *B.*, Huxley in: Quart. J. geol. Soc., v. 12 p. 35 | 1861 *Bodothria*, P. J. Beneden in: Mém. Ac. Belgique, v. 33 [nr. 3] p. 73, 76, 174 (*Bodotria*, p. 166) | 1864 *Bodotria*, Fr. Müller, Für Darwin, p. 12, 54 f. 52 | 1875 *Bodothria*, R. T. Maitland in: Tijdschr. Nederl. dierk.

Ver., v. 1 p. 240 | 1900 *Bodotria*, T. Stebbing in: Willey, Zool. Results, pars 5 p. 610 | 1901 *B.*, T. Scott in: Brit. Ass. Handb. Glasgow, p. 332 | 1907 *B.*, Calman in: Tr. zool. Soc. London, v. 181 p. 3 | 1909 *B.*, Stappers in: Cellule, v. 25 p. 368 (alimentary system) | 1912 *B.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 129, 140.

Carapace without lateral cornua; first pedigerous segment inconspicuous, the second long. Only the first pair of the peraeopods carrying exopods in either sex; second peraeopods with the third joint indistinct. Endopod of uropods simple or two-jointed with second joint always the shorter. Hepatopancreatic glands with one pair of distally bifurcated lobes.

11 species accepted, 3 doubtful.

Synopsis of species:

- | | | | |
|----|---|--|--------------------------|
| 1 | { | Uropod with two-jointed endopod — 2. | |
| | | Uropod with endopod simple — 7. | |
| 2 | { | Eye present — 3. | |
| | | Eye wanting — 6. | |
| 3 | { | Carapace with two pairs of lateral ridges | 1. <i>B. pulchella</i> |
| | | Carapace with not more than one pair of lateral ridges — 4. | |
| 4 | { | Lateral ridges faint on carapace, evanescent beyond | 2. <i>B. sublevis</i> |
| | | Lateral ridges distinct on carapace, continued on free pedigerous segments — 5. | |
| 5 | { | Free pedigerous segments with dorsal carina simple | 3. <i>B. scorpioides</i> |
| | | Free pedigerous segments with dorsal carina crested | 4. <i>B. gibba</i> |
| 6 | { | Uropod with endopod about half the length of the peduncle | 5. <i>B. montagui</i> |
| | | Uropod with endopod two-thirds of the length of the peduncle | 6. <i>B. australis</i> |
| 7 | { | Free pedigerous segments some or all with lateral ridges — 8. | |
| | | Free pedigerous segments without lateral ridges — 10. | |
| 8 | { | Carapace with lateral ridges partial and faint | 7. <i>B. pulex</i> |
| | | Carapace with lateral ridges well developed — 9. | |
| 9 | { | Peraeopod 1 with 2 nd joint much longer than rest of limb | 8. <i>B. arenosa</i> |
| | | Peraeopod 1 with 2 nd joint little or not at all longer than rest of limb | 9. <i>B. similis</i> |
| 10 | { | Pseudorostrum with antero-lateral tooth acute | 10. <i>B. siamensis</i> |
| | | Pseudorostrum with antero-lateral tooth blunt | 11. <i>B. parva</i> |

1. *B. pulchella* (O. Sars) 1878 & 1879 *Cuma p.*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 485 t. 6; v. 4 p. 124 t. 60 | 1890 *C. p.*, T. Scott in: Rep. Fish. Board Scotl., v. 8 p. 329 | 1899 *C. p.*, T. Scott in: Rep. Fish. Board Scotl., v. 17 p. 267 | 1901 *C. p.*, A. O. Walker in: J. Linn. Soc. London, v. 28 p. 294 | 1907 *Bodotria p.*, Calman in: Bull. Mus. Paris, p. 116 tf. 1 | 1907 *B. p.*, Calman in: Tr. zool. Soc. London, v. 181 p. 3 | 1909 *B. p.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 p. 26 | 1912 *B. pulchellus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 141.

Pseudorostrum very short, obtuse, with a little antero-lateral tooth. The medio-dorsal line of the carapace depressed near the middle in the ♂, in both sexes flanked by 2 pairs of longitudinal carinae, the upper nearly straight and at least sometimes reaching the hind margin, the lower curved and distally joining the upper one. Only a median carina on the pedigerous segments, of which the 2nd (1st free) is much the largest and in the ♂ raised much above the rest. Pleon segments with median carina in the ♂, in which the 5th segment is distally constricted. Eye prominent. Antenna 1 with much curved 1st joint. Maxilliped 3 with distal process of 2nd joint apically truncate. Peraeopod 1 with 5th joint not quite so long as 6th and 7th combined. Peraeopod 2 having the slender curved 2nd joint armed on the concave margin with some 6 retroverted teeth. Uropods with rami in ♂ less,

in ♀ more, than half as long as the peduncle; endopod 2-jointed, the large 1st joint armed on serrate, medial margin in ♂ with 8, in ♀ with 3, strong spines, the much shorter and narrower 2nd only with apical spines. Colour dusky in front. L. ♂ 3.2 mm, ♀ 2.5 mm.

Mediterranean, Bay of Naples, depth 9—19 m, Cannes, 19 m; Bay of Biscay, Bayonne; Scotland, Forth and Clyde; England, Liverpool Bay.

2. **B. sublevis** Calm. 1907 *B. s.*, Calman in: Tr. zool. Soc. London, v. 181 p. 3 t. 1 f. 1—3.

Pseudorostrum nearly horizontal, antero-lateral angle well developed. Medio-dorsal line of carapace with a depression some distance from the hind margin, the carina continued on the pedigerous segments, but nowhere prominent, the flanking lateral carinae a single pair, distinct only in its middle portion, not continued on the 2nd pedigerous segment and barely indicated on the 3 following segments. Peraeopod 1, 2nd joint a little shorter than all the following combined, and 5th than 6th and 7th combined. Rami of uropods two-thirds as long as peduncle, endopod with 1st joint nearly 4 times as long as 2nd, 1st with 5 spines on medial margin, 2nd with 2 at apex. Immature ♂ with smoother carapace, the lateral carinae alone distinct. L. 2.6 mm.

Gulf of Siam, depth 9 m.

3. **B. scorpioides** (Montagu) 1804 *Cancer s.*, Montagu in: Tr. Linn. Soc. London, v. 7 p. 70 t. 6 f. 5 | 1812 *Astacus s.*, Pennant, Brit. Zool., ed. 5 v. 4 p. 35 | 1818 *Diastylis ? s.*, Say in: J. Ac. Philad., v. 1 p. 314 | 1825 *D. ? scorpionides*, A. G. Desmarest, Consid. gén. Crust., p. 245 | 1843 *Cuma edwardsii*, Goodsir in: Edinb. new phil. J., v. 34 p. 123 t. 2 f. 1—13, 18; t. 4 f. 11 | 1846 *C. scorpioides*, Kröyer in: Naturh. Tidsskr., ser. 2 v. 2 p. 123 (nota) | 1853 *C. edwardsii*, T. Bell, Brit. stalk-eyed Crust., p. 326 ff. on p. 328 (not those on p. 326) | 1856 *C. scorpioides*, Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 456 t. 14 f. 2 | 1863 *C. s.*, A. M. Norman in: Tr. Tyneside Club, v. 5 iv p. 271 | 1878 *C. edwardsii*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 470 t. 1—3 | 1883 *C. scorpioides*, Burmeister, Beitr. Cuma, p. 3 | 1889 *C. edwardsii*, Hoek in: Tijdschr. Nederl. dierk. Ver., ser. 2 v. 2 p. 170, ? *C. scorpioides* var. | 1893 *C. scorpioides*, T. Stebbing in: Int. sci. Ser., v. 74 p. 302 | 1899 & 1900 *C. edwardsii*, G. O. Sars, Crust. Norway, v. 3 p. 12 t. 4; *C. scorpioides*, p. 106 | 1901 *Bodotria scorpioides*, T. Scott in: Rep. Fish. Board Scotl., v. 19 p. 273 | 1905 *B. s.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 13 | 1906 *B. s.*, A. M. Norman & T. Scott, Crust. Devon Cornwall, p. 29 | 1907 *B. s.*, Calman in: Tr. zool. Soc. London, v. 181 p. 3 | 1909 *B. s.*, Stappers in: Cellule, v. 25 p. 368 t. 2 f. 19 | 1909 *B. s.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 p. 26.

Pseudorostrum short, apically truncate, antero-lateral tooth short, acute. Carapace hard, with longitudinal median carina and pair of lateral carinae continued to the end of the 5th pleon segment, more strongly developed in pleon of ♂ than in that of ♀. 2nd (1st free) pedigerous segment shorter but more strongly carinate in ♂ than in ♀. Pleon segment 5 in ♂ narrowed in distal half. Eye more prominent in ♂, pigment dark, corneal lenses 9. Antenna 1, 1st joint straight, in ♀ not so long as 2nd and 3^d combined, 3^d longer than 2nd. Peraeopod 1, 2nd joint longer than all the following joints combined, 5th much longer than 6th, but not so long as the subequal 5th and 6th combined. Peraeopod 2, 2nd joint longer than the following 5 joints combined. Rami of uropods subequal, rather longer in ♀, a little shorter in ♂, than half the peduncle, which in ♂ has the medial margin bordered with plumose setae and spines, the endopod having on

that margin 7 spines in ♂, 4 in ♀, the much shorter 2nd joint being without spines except 2 at the apex. Colour pale with dark patches. L. 5—6 mm.

British Isles, France, Kattegat, Norway, Mediterranean. Depth, between tide-marks (Torquay), to 46 m (off Tynemouth).

4. **B. gibba** (O. Sars) 1878 *Cuma g.*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 483 t. 4, 5 | 1912 *Bodotria gibbus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 141.

Pseudorostrum short, obtuse, slightly upturned, antero-lateral tooth well marked. Integument coarsely squamose. Carapace with depression median in ♀, nearer to the front in ♂, longitudinal median carina and flanking pair of carinae, the latter continued some way along the body, while the median carina is conspicuously upraised on the 4 free pedigerous segments and first two of the pleon, the crest on the 2nd (first free) pedigerous segment being very high and acutely tipped in the ♀ but lower and flat-topped in the ♂. Eye distinct. Antenna 1, 1st joint in ♀ longer than 2nd and 3^d combined. Peraeopod 1, 2nd joint much longer than the rest combined, 5th a little longer than 6th, 6th than 7th. Peraeopod 2, 2nd joint much longer than the following 5 combined. Armature and structure of uropods differing but little from *B. scorpioides*, but rami in both sexes more than half the length of the peduncle. Colour dusky with a deeper shade anteriorly. L. ♀ 3·7, ♂ 4·7 mm.

Mediterranean, Goletta, depth 4—9 m.

5. **B. montagui** Stebb. 1912 *B. m.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 141 t. 51 A (3A).

Agreeing with *B. scorpioides*, except in integument little calcified, carapace with pair of oblique grooves diverging near the middle backwards from the central carina, 4th pedigerous segment not separated in dorsal outline from its neighbours by deep incisions, eye wanting, 3^d joint of antenna 1 not longer than 2nd, fifth joint of peraeopod 1 only moderately longer than 6th, 3^d joint of peraeopod 2 faintly indicated. L. ♀ 4·5 mm.

S. Africa, lat. 32° 53' 30" S., long. 28° 11' 00" E., depth 75 m.

6. **B. australis** Stebb. 1912 *B. a.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 142 t. 51 B (3B).

Pseudorostral lobes with antero-lateral angle well marked. Carapace with a pair of infero-lateral carinae presenting a scalloped edge, while the lower margin is fringed with little bosses. Last 3 pedigerous segments and first 2 of pleon made distinct by deep depressions. Integument little calcified. Eye wanting. Antenna 1 with 3^d joint shorter than 2nd. Maxilliped 2 having 2nd joint widest distally instead of in proximal half as in *B. montagui*. Peraeopod 1 with 6th joint not longer than 7th and both together not so long as the 5th. Peraeopod 2 with 3^d joint obsolete. Rami of uropods $\frac{2}{3}$ ^{ds} of the length of the peduncle, exopod scarcely longer than endopod, of which the 2nd joint a little exceeds $\frac{1}{3}$ ^d of the 1st. L. ♀ 3·25 mm.

S. Africa, lat. 32° 53' 30" S., long. 28° 11' 00" E., depth 75 m.

7. **B. pulex** (Zimmer) 1903 *Cuma p.*, Zimmer in: Zool. Jahrb., Syst. v. 18 v1 p. 666 tf. A—C | 1912 *Bodotria p.*, Calman in: P. U. S. Mus., v. 41 p. 609.

Pseudorostrum very short, distally truncate, slightly upturned, antero-lateral tooth well developed. Integument closely pitted. Carapace with median carina, continued along the body, the pair of lateral carinae only

developed on the front part of the carapace and on the free pedigerous segments. 1st pedigerous segment indicated by a suture. Eye well developed. Antenna 1 and Peraeopod 1 short. Rami of uropods subequal, about three-fourths length of peduncle, endopod 1-jointed, its medial margin serrate, carrying 5 spines, with a much larger spine at the apex. L. ♀ about 3.5 mm. ♂ not known.

Enosima (Japan), depth 6—22 m.

8. **B. arenosa** Goodsir 1843 *B. a.*, Goodsir in: Edinb. new phil. J., v. 34 p. 120, 138 t. 2 f. 17; t. 3 f. 8—13 | 1846 *B. a.*, Krøyer in: Naturh. Tidsskr., ser. 2 v. 211 p. 210 | 1853 *B. a.*, T. Bell, Brit. stalk-eyed Crust., p. 332 tf. (♂) | 1856 *B. a.*, Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 465 t. 15 f. 6 | 1861 *Bodotria a.*, P. J. Beneden in: Mém. Ac. Belgique, v. 33 p. 78 | 1866 *Cuma pusilla*, G. O. Sars in: Nyt Mag. Naturv., v. 15 p. 108 | 1867 *Bodotria arenosa*, Marcusen in: Arch. Naturg., v. 331 p. 357 | 1873 *B. a.*, P. Fischer in: Act. Soc. Linn. Bordeaux, ser. 3 v. 8 v p. 425 | 1899 & 1900 *Cuma scorpioides* + *C. arenosa*, G. O. Sars, Crust. Norway, v. 3 p. 10 t. 1—3; p. 106 | 1901 *Bodotria a.*, T. Scott in: Rep. Fish. Board Scotl., v. 19 p. 273 | 1909 *B. a.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 311 p. 25 | 1912 *B. arenosus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 141.

Pseudorostrum very short, truncate, antero-lateral tooth acute. Carapace with median carina from the eyelobe to the hind margin and continued along the body to the end of the 5th pleon segment; a pair of lateral carinae traverse the carapace and free pedigerous segments, but are only faintly indicated on the pleon. 2nd (1st free) pedigerous segment the longest. Eye composed of 8 corneal lenses. Antenna 1, 1st joint longer than 2nd and 3^d combined, 3^d a little longer than 2nd. Antenna 2 ♂, flagellum reaching end of the body. Peraeopod 1, 2nd joint much longer than the rest combined. Peraeopod 2, 2nd joint longer than the rest (4 in number) combined. Rami of uropods a little under half the length of the peduncle, which has its medial margin in the ♂ fringed with plumose setae and spines; the 1-jointed endopod in both sexes has 3 spines on the medial margin and 2 at the apex. L. 7 mm. — Fig. 1 p. 2.

Scotland; S. and S. W. Norway; 30 miles off Sunderland, depth 84 m.

9. **B. similis** Calm. 1907 *B. s.*, Calman in: Tr. zool. Soc. London, v. 181 p. 4 t. 1 f. 4—9.

Similar to *B. arenosa*, pseudorostrum and median carina as in that species. Pair of lateral carinae on carapace and free pedigerous segments except the last in the ♀, with a second lower pair of lateral carinae on the carapace of the ♂ but not of the ♀. Peraeopod 1, 2nd joint a little shorter in ♀, a little longer in ♂, than the rest of the joints combined. Rami of uropods subequal in ♂, two-thirds as long as peduncle, exopod about three-fourths of peduncle in ♀, rather longer than the 1-jointed endopod, which has six spines on medial margin in ♀, 12 in ♂. L. ♀ 2.15, ♂ 2.8 mm.

Gulf of Siam, depth 9—18 m.

10. **B. siamensis** Calm. 1907 *B. s.*, Calman in: Tr. zool. Soc. London, v. 181 p. 5 t. 1 f. 10—15.

Near to *B. similis*. Pseudorostrum very short and blunt, antero-lateral tooth almost spiniform. Median carina of carapace and pedigerous segments not very prominent, pair of lateral carinae faint on front part of carapace

and not reaching the end of it. Peraeopod 1, 2nd joint about four-fifths as long as the rest combined. Rami of uropods subequal, five-sixths in ♀, about three-fourths in ♂, as long as the peduncle, the 1-jointed endopod with 9 or 10 spines on medial margin. A transverse dark stripe precedes the 2nd (1st free) pedigerous segment. L. ♀ 2.1 mm, ♂ 2.75 mm.

Gulf of Siam, depth 9—18 m.

11. **B. parva** Calm. 1907 *B. p.*, Calman in: Tr. zool. Soc. London, v. 181 p. 5 t. 1 f. 16—18 | 1912 *B. parvus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 141.

Pseudorostrum very short, blunt, antero-lateral tooth rounded. Carapace having near the hinder end a depression on the dorsal edge bounded by a slight crescentic transverse ridge, and also a pair of lateral carinae faintly marked, not reaching the hind margin nor joining the transverse ridge. Free pedigerous segments without carinae. Peraeopod 1, 2nd joint a little shorter than the other joints combined. Rami of uropods subequal, rather less than two-thirds as long as the peduncle; endopod 1-jointed with small spine near middle of the medial margin, which then becomes coarsely serrate, the apex carrying 2 very unequal spines. L. ♀ 1.5 mm, ♂ not known.

Gulf of Siam, depth 9 m.

B. ? audouinii (M.-E.) 1828 *Cuma a.*, H. Milne-Edwards in: Ann. Sci. nat., v. 13 p. 294 t. 13 B f. 1—7 | 1840 *C. a.*, H. Milne-Edwards, Hist. nat. Crust., v. 3 p. 553 | 1840 *C. a.*, H. Lucas in: Hist. An. artic., p. 268 | 1843 *C. a.*, Goodsir in: Edinb. new phil. J., v. 34 p. 124 t. 2 f. 14—16; t. 4 f. 12 | 1899 *C. scorpioides* (pro: *B. arenosa*), G. O. Sars, Crust. Norway, v. 3 p. 10, 11.

Described as having 2 eyes, short 2nd antennae, 5 pairs of natatory feet, colour yellowish white, length about 7 mm; figures show carapace without lateral ridges, pleon without pleopods, length 12.5 mm.

B. concava D. Roberts. 1868 *B. c.*, D. Robertson in: P. Nat. Hist. Soc. Glasgow, v. 11 p. 69 (descr. nulla).

B. ? sp. Calm. 1912 *B. ? sp.*, Calman in: P. U. S. Mus., v. 41 p. 609.

♀. Carapace and pedigerous segments with lateral ridge. First peraeopods with fifth joint expanded, about one and one half times as broad as the fourth.

Honshu Island (Japan), surface.

4. Gen. **Cyclaspis** G. O. Sars

1865 *Cyclapis* (err. pro: *Cyclaspis*) (Sp. un.: *Cyclaspis longicaudata*), G. O. Sars in: Forh. Selsk. Christian., 1864 p. 206, 207 | 1878 *Cyclaspis* (part.), G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 487 | 1887 *C.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 11 | 1893 *C.* (part.), T. Stebbing in: Int. sci. Ser., v. 74 p. 302, 303 | 1895 *Cyclaspis* (err. pro: *Cyclaspis*), H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c. p. 51 | 1899 *Cyclaspis*, G. O. Sars, Crust. Norway, v. 3 p. 15 | 1904 *C.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 167 | 1905 *C.*, Calman in: Siboga-Exp., pars 36 p. 5 | 1907 *C.*, Calman in: Tr. zool. Soc. London, v. 181 p. 6 | 1908 *C.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 160 | 1910 *C.*, T. Stebbing in: Ann. S. Afr. Mus., v. 6 iv p. 413.

Carapace without lateral cornua; first pedigerous segment indistinct except sometimes in adult ♀, the second not long. Maxilla 1 with palp ending in 1 or 2 filaments. Only the first pair of the peraeopods carrying exopods in either sex; second peraeopods with the third joint distinct. Endopod of uropods simple.

25 species.

Synopsis of species:

- 1 { Eye wanting — 2.
Eye present — 5.
- 2 { Pedigerous segment 2 forming raised border to the carapace; telsonic segment much shorter than preceding segment 1. *C. glacialis*
Pedigerous segment 2 not forming raised border to the carapace; telsonic segment not much shorter than preceding segment — 3.
- 3 { Carapace of ♀ subcylindrical; eyelobe parallel-sided 2. *C. sibogae*
Carapace of ♀ almost globose; apex of eyelobe acute — 4.
- 4 { Pseudorostral lobes meeting well in front of eyelobe 3. *C. longicaudata*
Pseudorostral lobes barely meeting in front of eyelobe 4. *C. spectabilis*
- 5 { Carapace smooth¹⁾ — 6.
Carapace sculptured or dentate — 12.
- 6 { Peduncle of uropods much longer than rami . . . 5. *C. picta*
Peduncle of uropods not much longer than rami — 7.
- 7 { Peraeopod 1 with apical process to 2nd joint — 8.
Peraeopod 1 without apical process to 2nd joint — 9.
- 8 { Peraeopod 1 long, with 6th joint much longer than 5th 6. *C. hornelli*
Peraeopod 1 not long, with 6th joint not much longer than 5th 7. *C. herdmani*
- 9 { Peraeopod 1 with 2nd joint subequal to rest of limb — 10.
Peraeopod 1 with 2nd joint not subequal to rest of limb — 11.
- 10 { Peraeopod 1 with setae on apex of 2nd joint . . 8. *C. levis*
Peraeopod 1 without setae on apex of 2nd joint . . 9. *C. varians*
- 11 { Peraeopod 1 with 2nd joint longer than rest of limb 10. *C. pusilla*
Peraeopod 1 with 2nd joint shorter than rest of limb 11. *C. longipes*
- 12 { Ridges enclosing quadri-lateral area on each side of carapace — 13.
Ridges not enclosing quadri-lateral areas on carapace — 16.
- 13 { Two strong transverse ridges on back of carapace — 14.
No transverse ridges on back of carapace — 15.
- 14 { Hinder transverse ridge with 2 procurved teeth . 12. *C. persculpta*
Hinder transverse ridge without teeth 13. *C. exsculpta*
- 15 { Lateral quadrangles with 4 prominent tubercles . 14. *C. elegans*
Lateral quadrangles with only 1 prominent tubercle 15. *C. similis*
- 16 { Dorsal carina of carapace with forward pointing tooth near front — 17.
Dorsal carina of carapace unarmed — 18.
- 17 { Carapace with oblique ridge on either side . . . 16. *C. uniplicata*
Carapace without lateral ridges 17. *C. unicornis*
- 18 { Eyelobe not enclosed by pseudo-lateral lobes — 19.
Eyelobe enclosed by pseudo-lateral lobes — 20.
- 19 { Carapace encircled by collar-like ridge . . . 18. *C. cingulata*
Carapace without collar-like ridge — 21.
- 20 { Pedigerous segment 5 without median carina . . . 19. *C. thomsoni*
Pedigerous segment 5 with median carina — 22.

¹⁾ *C. varians* sometimes denticulate.

- | | | | |
|----|---|--|---------------------------------|
| 21 | { | Three carinae on last 2 pedigerous segments and first 2 of pleon | 20. <i>C. australis</i> |
| | | A single carina from last pedigerous segment to end of pleon | 21. <i>C. quadrituberculata</i> |
| 22 | { | Pseudorostral lobes barely meeting in front of eyelobe | 22. <i>C. gigas</i> |
| | | Pseudorostral lobes meeting well in front of eyelobe — 23. | |
| 23 | { | Carapace with several longitudinal ribs | 23. <i>C. costata</i> |
| | | Carapace without such ribs — 24. | |
| 24 | { | Carapace with 2 pairs of obliquely transverse ridges | 24. <i>C. bistriata</i> |
| | | Carapace with 3 pairs of transverse ridges | 25. <i>C. triplicata</i> |

1. *C. glacialis* H. J. Hansen 1908 *C. g.*, H. J. Hansen in: Résult. Voy. Belgica, Schiz. Cum. p. 15 t. 3 f. 1 a—g.

Pseudorostral lobes only just touching in front of the eyelobe; antero-lateral corners each forming a subacute tooth. Carapace with a rounded longitudinal median carina, broad for the first three-fifths of the length, this part surmounted by a narrow secondary carina and flanked by a pair of hollows, each occupied centrally by an oblong arched area. Pedigerous segment 2 constituting raised hind margin of the carapace, the abruptly lower 3^d and 4th not carinate, the 5th with carina. Pleon with narrowly rounded carina, gradually vanishing on the telsonic segment, which is decidedly shorter than the 5th. Eyelobe rounded in front, then constricted, without corneal lenses. Maxilliped 3, 2nd joint broader at base than distally, 4th distally serrated on medial side, 7th as long as 6th. Peraeopod 1, 2nd joint rather longer than rest of limb, markedly tapering in distal third of its length, 5th joint as long as 6th, twice as long as 7th. Peduncle of uropods equal in length to the rami. Colour yellow with rounded white spots. L. ♀ without marsupium 10.3 mm, ♂ unknown.

Lat. 71° 14' S., long. 80° 14' W. (Antarctic).

2. *C. sibogae* Calm. 1905 *C. s.*, Calman in: Siboga-Exp., pars 36 p. 4 t. 1 f. 4—6 | 1907 *C. s.*, Calman in: Tr. zool. Soc. London, v. 181 p. 7.

Pseudorostral lobes short, truncate, slightly upturned, not meeting in front of the eyelobe; antero-lateral tooth projecting a little in front of the apices. Carapace subcylindrical, with medio-dorsal keel, evanescent to the rear, flanked by a low pair of rounded ridges between two strong transverse ridges, the anterior running nearly vertically down on each side, where it forms an obtuse tooth with the lateral curve of the second ridge. A third ridge curves towards the second without reaching it. Pedigerous segment 2 is distinct, with rounded dorsal crest; 5th segment the longest. Pleon segments subcylindrical, with 2 ridges on each side converging distally, the lateral articular processes very slight, telsonic segment little shorter than the fifth. Eyelobe long and narrow, extending to the apices of the pseudorostrum, devoid of corneal lenses. Peraeopod 1, 2nd joint considerably longer than rest of limb, 3^d and 4th combined little longer than 5th, all three little longer than 6th, which is little longer than the 7th. Peduncle of uropods slender, rami broken. L ♀ subadult 16.5 mm.

Lat. 0° 51' 1 S., long. 129° 48' 8 E., depth 411 m.

3. *C. longicaudata* O. Sars 1865 *C. l.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 207 | 1876 *C. l.*, A. M. Norman in: P. R. Soc. London, v. 25 p. 214 | 1879 *Cyclaspis l.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 73 | 1896 *Cyclaspis l.*,

J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 534 t. 28 f. 2a—v | 1899 *C. l.*, G. O. Sars, Crust. Norway, v. 3 p. 16 t. 7, 8 | 1900 *C. l.*, Zimmer in: Fauna arctica, v. 1 p. 414 (additional references) | 1905 *C. l.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 14 | 1912 *C. l.*, Calman in: P. U. S. Mus., v. 41 p. 609.

Pseudorostral lobes meeting for a short space in front of the minute acute eyelobe, obliquely truncate; antero-lateral tooth well marked in ♀ only, in both sexes about level with pseudorostral apices. Carapace quite smooth, almost globose in ♀, less wide and deep in ♂. Pedigerous segment 2 well developed, segments 3—5 narrowing abruptly. Pleon long and especially in ♀ very slender, telsonic segment distally widened, little shorter than the 5th segment, which in ♂ is distally narrowed. Eye wanting. Antenna 1 with very long sensory filaments on the flagellum and another group in the ♂ at apex of the peduncle. Antenna 2 of ♀ 2-jointed, with 2 plumose setae, the flagellum of ♂ not reaching end of the body. Mandible with numerous spines in spine-row. Maxilla 1 with single filament at apex of palp. Maxilliped 1 with several branchial sacs in straight series. Maxilliped 2, 2nd joint large, distally denticulate. Maxilliped 3, 2nd joint very large, strongly bent, produced beyond the 4th. Peraeopod 1, 2nd joint not longer than rest of limb, very broad except at narrowly tapering distal part, of the others the 6th joint is the longest. Peraeopod 2 longer than any succeeding pair. Pleopods of ♂ with interlocking process on lateral margin of endopod. Peduncle of uropods about half in ♀ and two-thirds in ♂ the length of the subequal rami, endopod in ♂ fringed with dense row of ciliated spinules. Colour pure white. L. ♀ 8 mm, ♂ 7 mm.

N. W. and N. E. Atlantic; N. Norway; W. Ireland; Bay of Biscay; Mediterranean. Depth 120—3285 m.

4. *C. spectabilis* Zimmer 1908 *C. s.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 161 t. 36 f. 1—16.

Pseudorostral lobes meeting only in a point in front of the acute eyelobe, apically blunt; antero-lateral tooth not quite level with the apices. Carapace almost globose, but with a slightly angled transverse carina behind the frontal area; pedigerous segments 2 and 3 almost continuing the curves of the carapace in dorsal view, segments 4 and 5 abruptly narrowed. Telsonic segment scarcely shorter than the preceding segment. Eyelobe longer than broad with narrow apex. Eye wanting. Appendages in near agreement with *C. longicaudata*, but maxilliped 2 has the 2nd joint less robust, not distally denticulate, maxilliped 3 has the 2nd joint not produced to end of the 4th. Peduncle of uropods a little over half the length of the exopod which is slightly longer than the endopod. Colour white, pellucid. L. ♀ about 12 mm.

Lat. 35° 9' S., long. 18° 32' E. (South Atlantic), depth 565 m.

5. *C. picta* Calm. 1904 *C. p.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 170 t. 3 f. 54, 55 | 1907 *C. p.*, Calman in: Tr. zool. Soc. London, v. 181 p. 6.

Pseudorostrum prominent, acute, lobes contiguous well in advance of the eyelobe; antero-lateral corners sharply produced. Carapace smooth, somewhat compressed with median carina becoming fainter to the rear. Pedigerous segment 1 marked by faint suture. Pleon segments subcylindrical, with lateral articular processes well marked; telsonic segment not much longer than broad, shorter than the 5th segment. Eye pigmented, corneal lenses indistinct. Peduncle of uropods more than twice as long as the subequal rami, endopod rather broad, its apex not acute. L. ♀ subadult 3 mm.

Gulf of Manaar, depth 13 m.

6. **C. hornelli** Calm. 1904 *C. h.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 172 t. 4 f. 67—71 | 1907 *C. h.*, Calman in: Tr. zool. Soc. London, v. 181 p. 6.

Closely resembling *C. herdmani* (nr. 7), but carapace still smoother, dorsal keel simple, feebler, pereopod 1 much longer, the apically produced 2nd joint about three-fourths as long as rest of limb, 5th half and 7th three-fourths as long as 6th, in pereopod 5 the 4th joint only two-thirds as long as the 5th; peduncle of uropods a little longer than the exopod, which is slightly longer than the endopod; the latter with 14 spines on medial margin of ♂, 6 on upper part of that margin in ♀. L. ♀ 5.3 mm, ♂ 4.2 mm.

Gulf of Manaar, depth 13—17 m.

7. **C. herdmani** Calm. 1904 *C. h.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 171 t. 3 f. 56—59; t. 4 f. 60—66 | 1907 *C. h.*, Calman in: Tr. zool. Soc. London, v. 181 p. 6.

Pseudorostrum truncate, eyelobe reaching quite to the tip; antero-lateral tooth subacute. Carapace almost smooth in ♂, in ♀ with median keel anteriorly between 2 shallow depressions, followed by feebler double keel starting from a shallow pit. Pedigerous segment 1 exposed in adult ♀. Pleon segments subcylindrical with lateral articular processes. Eyelobe rather prominent, not longer than broad, corneal lenses indistinctly defined in ♀, large and conspicuous in ♂. Antenna 1, 1st joint longer than 2nd and third combined, 2nd a little shorter than 3^d, flagellum 2-jointed. Antenna 2 of ♀ 2-jointed. Pereopod 1 not elongate, 2nd joint as long as rest of limb, apically produced into a short pointed process as in *C. hornelli*, 5th, 6th, and 7th joints subequal, each in ♀ little longer than the 4th, but more extended in ♂. Pereopod 2 with 5th joint little more than half as long as the 4th, to which it is subequal in the following limbs. Peduncle of uropod as long as the subequal rami, which have acute apices without terminal spines, endopod in ♀ with some 6 spinules along middle of medial margin, in ♂ rather shorter than exopod, fringed with about 23 spinules decreasing in size successively and leaving bare the last third of the margin. L. ♀ 4.4 mm, ♂ 4.3 mm.

Gulf of Manaar, depth 13 m.

8. **C. levis** G. M. Thoms. 1892 *C. l.*, G. M. Thomson in: J. Linn. Soc. London, v. 24 p. 264 t. 16 f. 1—6; t. 17 f. 7—26 | 1893 *C. l.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 303 | 1899 *C. laevis*, G. O. Sars, Crust. Norway, v. 3 p. 16 | 1904 *C. levis*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 170, 172 | 1907 *C. l.* (Thomson?), Calman in: Tr. zool. Soc. London, v. 181 p. 6, 8, 17 t. 5 f. 6—8 | 1908 *C. l.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 161.

Pseudorostral lobes with apices subobtuse, meeting for a short distance in front of the hardly visible eyelobe (eyelobe running quite to tip of pseudorostrum, Calman). Carapace described as smooth, destitute of ridges, yet keeled above, and with a short feeble keel running back from the antero-lateral tooth (Thomson fig., Calman text). Only the last 4 pedigerous segments exposed behind the carapace (1st exposed at the sides in adult ♀, Calman). A dorsal keel and slight lateral keels traversing the pleon, the segments of which have lateral notches behind and interlocking knobs in front. Eye not made out (with corneal facets, Calman). Antenna 1, 1st joint much larger than 2nd and 3^d combined, 2nd notably larger than 3^d (2nd and 3^d equal, Calman). Antenna 2 of ♀ 2-jointed. Maxilla 1, the palp ending in 2 long filaments. Maxilliped 3 with apical process of 2nd joint not quite

reaching produced apex of 4th joint (no doubt by error regarded as the 3^d). Peraeopod 1, 2nd joint (without the long slender apical process) as long as rest of limb (the supposed apical process, unique in length, really an accidental meeting of 2 long apical setae, Calman), 5th and 7th joints subequal, each shorter than the 6th. Pleopods of ♂ with apically serrate coupling spines on medial margin of peduncle, 5th pair somewhat smaller than the others. Peduncle of uropods subequal to the exopod which is very slightly longer than the apically acute endopod; the latter in the male has the medial margin fringed above with setae, below with spines. L. 7—8 mm.

New Zealand, surface to 15 m.

9. **C. varians** Calm. 1912 *C. v.*, Calman in: P.U.S.Mus., v. 41 p. 610 tf. 1—5.

Pseudorostral lobes meeting in front of slightly prominent eyelobe, truncate more obliquely in ♀ than in ♂, forming a sinus with antero-lateral tooth sharper in the ♀ than in the ♂. Carapace smooth except for longitudinal median keel in ♀ which is sometimes anteriorly denticulate behind the eyelobe. First pedigerous segment exposed. First five pleon segments with lateral articular processes in the ♀. Eye pigmented. First antennae with 3^d joint longer than 2nd. Peraeopod 1 short, 2nd joint subequal to rest of limb, without apical process or apical setae, 7th joint rather shorter than 5th or 6th. Peduncle of uropods in ♀ once and a half, in ♂ nearly twice as long as the telsonic segment. Rami in ♀ subequal, more than two-thirds as long as the peduncle, endopod with medial margin serrated, carrying 4 spines, and an apical spine; endopod in ♂ less than two-thirds as long as the peduncle, a little shorter than the exopod, with about 10 spines on medial margin and an apical spine. L. ♀ 3.4 mm, ♂ 4.3 mm.

U. S. A., Vineyard Sound, Wood's Hole; surface.

10. **C. pusilla** O. Sars 1887 *C. p.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 19 t. 1 f. 21—23 | 1902 *C. argus*, Zimmer in: Zool. Jahrb., Syst. v. 17 p. 444 tf. A.—C | 1903 *C. a.*, Zimmer in: Zool. Jahrb., Syst. v. 18 p. 668 | 1907 *C. pusilla*, Calman in: Tr. zool. Soc. London, v. 181 p. 6.

♀ (*C. p.*) Pseudorostral lobes very short and obtuse; antero-lateral tooth well marked. Carapace large and almost globular, laterally smooth, dorsal line evenly arched. Pedigerous segment 1 not exposed, side plates of 2nd produced far forwards, 4th and 5th not higher or thicker than the slender cylindrical segments of the pleon, which are smooth except for the slight median keel continued from the anterior body. Eyelobe constricted at base, the rounded tumid terminal part provided with 7 corneal lenses, frontal pair very small. Peduncle of uropods rather longer than the subequal rami. Colour whitish, with brownish pink patches chiefly antero-lateral. L. ♀ adult 3.5 mm. ♂ not known, unless it be *C. argus*.

Flinders Passage, between Australia and New Guinea, depth 13 m.

♂ (*C. argus*). Differs from female by greater size, carapace not globose, antero-lateral tooth more obtuse, eyelobe not constricted at base and carrying 9 lenses, of which the lateral pairs are very small as well as the frontal. Peraeopod 1 (imperfect in ♀), 2nd joint longer than rest of limb, in which all the joints are rather short. Colour yellowish white. L. about 6 mm.

Australia, Plenty Bay.

11. *C. longipes* Calm. 1907 *C. l.*, Calman in: Tr. zool. Soc. London, v. 18: p. 6, 7 t. 5 f. 1—5.

Pseudorostral lobes very short, eyelobe reaching quite to the tip (overlying without separating them?); antero-lateral tooth almost spiniform in ♀, less so in ♂. Carapace of ♀ slightly compressed, not globose, with dorsal edge almost level, feebly carinate. First pedigerous segment well exposed in ♀, very slightly in ♂, second slightly carinate, sideplates well produced forwards. Pleon segments subcylindrical, with lateral articular processes. Prominent eyelobe provided with numerous corneal lenses, larger in ♂ than in ♀, frontal pair seemingly very small. Antenna 1 rather long, 3^d joint longer than 2nd. Peraeopod 1 very long and slender, 2nd joint little more than half as long as rest of limb, not apically produced, 7th joint nearly half as long as 2nd, longer than 5th, shorter than 6th. Peduncle of uropods longer than the rami, medial margin serrate in ♀, setose in ♂; endopod in ♀ three-fourths as long as exopod, with spines on distal half of medial margin, in ♂ only a little shorter than the exopod and fringed with 10 spines. L. ♀ 3.1 mm, ♂ 3.3 mm.

Danish West Indies, Cruz Bay, St. Jan.

12. *C. persculpta* Calm. 1905 *C. p.*, Calman in: Siboga-Exp., pars 36 p. 3 t. 1 f. 1—3 | 1907 *C. p.*, Calman in: Tr. zool. Soc. London, v. 18: p. 6, 16.

Very near to *C. exsculpta* (nr. 13). Pseudorostral lobes apically obliquely truncate with shallow emargination, the elongate narrow eyelobe overlying them to the apex; antero-lateral tooth well marked. Carapace strongly sculptured; a somewhat sinuous carina crossing the frontal lobe not far from the base of the eyelobe runs out into a prominent tooth on either side, marking the greatest breadth, its downward continuation meeting a straight horizontal ridge continued far backwards; a little behind the middle of the length of the carapace a second transverse carina on either side of a median notch rises into a laminar tooth with sharp apex bending forward and downward; laterally to this pair of hooks the carina is continued obliquely downwards and forwards on each side to join the longitudinal ridge which separates a dorsal depressed area from a lateral one, forming a tooth at the junction, from which a vertical ridge runs downwards as hind margin of the lateral area; to the rear two successive ridges run down to join the horizontal ridge above mentioned; there is a median dorsal keel, which behind the second transverse carina is elevated and undulating, forming three lobes; subparallel with this part there are a pair of longitudinal carinae. Pedigerous segments 3—5 have dorso-lateral carinae, segments 4 and 5 having also each a median carina. Pleon with median and lateral ridges, the median faint on segments 2—4, the lateral peculiarly arranged on segment 5; a transverse crescentic groove on the telsonic segment. Eyelobe having at the apex very small corneal lenses, the number undetermined. Peraeopod 1 long, slender, 2nd joint about two-thirds as long as rest of limb, 7th joint subequal to 5th, about two-thirds as long as 6th. Other limbs about as in *C. australis* (nr. 20). Peduncle of uropods little longer than the equal rami, which end acutely without terminal spines, endopod having more than the proximal half of its medial margin serrate, this part ending in a spine, the rest bare. L. ♀ with developing marsupium 11.25 mm, ♂ unknown.

Lat. 1° 42' 5 S., long. 130° 47' 5 E., W. of New Guinea; depth 32 m.

13. **C. exsculpta** O. Sars 1887 *C. e.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 20 t. 1 f. 24—26 | 1905 *C. e.*, Calman in: Siboga-Exp., pars 36 p. 3, 4 | 1907 *C. e.*, Calman in: Tr. zool. Soc. London, v. 181 p. 6.

Integument highly indurated. Pseudorostrum and eyelobe as in *C. persculpta*. Carapace strongly sculptured; a carina crossing it immediately behind the frontal lobe and a second at about one-third of its length from the end, the latter notched in the middle, both connected by a median longitudinal carina and 2 lateral ridges, dividing middle part of carapace into 4 depressed areas, 2 dorsal, 2 lateral of irregular shape. From anterior transverse carina 2 slight ridges run forward on each side, one ending in front of the antero-lateral tooth, the other behind it at some distance. The median carina behind the second transverse one is flanked by a subparallel pair. Pedigerous segments 2—4 with 3 longitudinal crests. Pleon missing. Eyelobe having at the apex a few small corneal lenses. Colour uniformly whitish. L. (carapace and pedigerous segments) 2 mm, estimate for total length under 5 mm.

Flinders Passage, between Australia and New Guinea, depth 13 m.

14. **C. elegans** Calm. 1907 *C. e.*, Calman in: Tr. zool. Soc. London, v. 181 p. 9 t. 2.

Pseudorostral lobes produced a little in front of the eyelobe, squarely truncate in ♂, a little obliquely in ♀; antero-lateral corners nearly on a level with the apices. Carapace strongly sculptured, but without transverse carinae; a median dorsal carina ends in a bluntly raised tooth; on each side a quadrilateral depressed area is bounded by ridges with a tubercle at each corner, the front margin sinuous, the hinder subparallel to that of the carapace, the lower horizontal ridge produced in front and behind to the edge of the carapace, the upper continued forward to the side of the pseudorostrum. Pedigerous segment 1 in ♀ showing a little laterally, 2nd large with carina ending in a sharp tooth, and side-plates expanded; tooth wanting and plates not expanded in ♂, median carina continued to end of pleon segment 5, accompanied by lateral carinae on pedigerous segments 4, 5, and first 2 pleon segments, these carinae stronger in ♂ than in ♀. Eyelobe constricted at base, little longer than broad, with about 9 corneal lenses but no pigment. Antenna 1 without trace of accessory flagellum, 3^d joint of peduncle shorter than 2nd. Antenna 2 of ♀ 1-jointed, with 3 plumose setae. About 18 spines in spine-row of mandible. Lower lip with apices very narrow, incurved, carrying spatulate spines. Maxilla 1 with 2 apical filaments on palp. Maxilliped with about 13 branchial leaves in ♀, 17 in ♂. Maxilliped 3, 2nd joint sharply angled, produced to middle of 4th joint which is also broadly produced. Peraeopod 1, 2nd joint longer than rest of limb, 6th joint not long but longer than the 5th or 7th. Pleopods of ♂ differing from those of *C. longicaudata* (nr. 3) by absence of process on lateral margin of endopod. Peduncle of uropods scarcely longer than the rami which are subequal in ♀, endopod serrate on distal half of medial margin and armed with a small pectinate spine, the apex slightly curved upwards and outwards; endopod in ♂ the shorter, strongly fringed like the peduncle with plumose setae. L. ♀ 6.3 mm, ♂ 6.2 mm.

New Zealand, Lyttleton Harbour: depth 2—9 m.

15. **C. similis** Calm. 1907 *C. s.*, Calman in: Tr. zool. Soc. London, v. 181 p. 12 t. 3 f. 1—3.

Similar to *C. elegans* (nr. 14) in shape and proportions, but lateral depressed area on carapace less distinctly excavated, with one tubercle instead

of four, the lower horizontal ridge continued behind with even curve into the hinder vertical ridge, not extending behind to the edge of the carapace; the hind vertical ridge forks into two obtusely diverging branches; the front one does not reach the ridge running backwards from the anterior upper tubercle. Dorsal crest of 2nd pedigerous segment produced backwards into a large rounded lobe. Dorso-lateral crests of following segments stronger than in *C. elegans*. Peduncle of uropods more decidedly longer than the rami, endopod not curved at the tip. L. ♀ 5.75 mm, ♂ (immature, with no cristiform lobe on 2nd pedigerous segment) 5.25 mm.

New Zealand, Lyttleton Harbour; depth 2—9 m.

16. *C. uniplicata* Calm. 1904 *C. sp.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v.2 p.160 | 1907 *C. uniplicata*, Calman in: Tr. zool. Soc. London, v.181 p.7, 13 t.4 f.11—20.

Pseudorostral lobes short, truncate, not reaching beyond the eyelobe; antero-lateral corner showing 2 teeth, the lower the sharper and more produced. Carapace sharply carinate, with tooth overhanging base of eyelobe, and sharp ridge from near the middle curving downwards and forwards on each side towards but not reaching the antero-lateral corner. First pedigerous segment narrowly exposed dorsally, 2nd feebly carinate. Pleon long, rather slender. Eyelobe not longer than broad, occupied by about 9 corneal lenses, with pigment. Antenna 1, 3^d joint longer than 2nd, accessory flagellum minute but distinct. Maxilliped 3, 2nd joint angled, longer than rest of limb, distally produced nearly to end of the much produced 4th. Peraeopod 1 very long, 2nd joint apart from distal tooth of medial margin little longer than 6th and 7th combined, 7th longer than 5th but considerably shorter than 6th. Peraeopod 2 stout, 2nd joint longer than rest of limb, in which the 7th joint is the longest. Peduncle of uropods slightly shorter than the exopod, as long as the endopod, which has about 9 spines on the medial margin, and is distally bare, apically acute. L. ♀ (immature) 4.9 mm, ♂ unknown.

Gulf of Siam, Koh Kam; depth 6—18 m.

17. *C. unicornis* Calm. 1907 *C. u.*, Calman in: Tr. zool. Soc. London, v.181 p.7, 14 t.5 f.9—11.

Pseudorostral lobes slightly prominent, eyelobe reaching quite to the tip; antero-lateral corner acutely produced, not quite level with pseudorostral apices. Carapace granular, with median carina produced into a forward pointing tooth behind the eyelobe, without transverse ridges. First pedigerous segment not exposed, 2nd feebly carinate. Pleon rather long. Peraeopod 1, 2nd joint about three-fourths as long as rest of limb, 3^d and 4th joints stout, the slender 5th and 6th equal, 7th much shorter than either. Peduncle of uropods considerably longer than the rami, exopod slightly longer than endopod, which has 4 small spines on the serrate medial margin and a long one on the subobtuse apex. L. ♀ (immature) 3.2 mm, ♂ unknown.

Danish West Indies, Cruz Bay, St. Jan.

18. *C. cingulata* Calm. 1907 *C. c.*, Calman in: Tr. zool. Soc. London, v.181 p.7, 15 t.4 f.1—10.

♀. Pseudorostral lobes short, horizontal, with the long narrow eyelobe projecting in front; antero-lateral tooth not level with the apices. Carapace strongly arched, a little in front of middle encircled by a very prominent collar, notched at the centre, its lateral apices turned a little forwards and

marking the greatest breadth of the carapace; on the last third of the length a medio-dorsal pair of carinae extend to the hind margin. Pedigerous segment 1 is dorsally exposed, though overhung by the carapace, the 4th and 5th have well marked dorso-lateral carinae, which are also found on the first 5



Fig. 15.

C. cingulata (♀) Calman.

pleon segments; a median keel extends from the 5th pedigerous to the 5th pleon segment, but is feeble at beginning and end of the series. Eyelobe with 11 corneal lenses on the distal end. Antenna 1 with 3^d joint longer than 2nd, accessory flagellum minute but distinct. Maxilliped 3, 2nd joint with distal process reaching nearly as far as that of the 4th joint, its length without this long process little more than the rest of limb. Peraeopod 1, 2nd joint feebly produced at apex, length less than rest of limb, 5th and 7th joints equal, each a little shorter than 6th. Peduncle of uropods longer than the exopod but slightly shorter than the endopod, which has 3 small spines about the middle of the medial margin, the apex bare, acute. L. 4.2 mm.

♂. Carapace with only a faint trace of the encircling collar, and without the hinder pair of dorsal carinae; infero-laterally a faint horizontal ridge meets the collar anteriorly. Dorso-lateral keels on last 2 pedigerous segments, but the stout pleon segments have no distinct keels. Terminal joints of peraeopod 1 longer and more slender than in ♀.

Gulf of Siam; depth 9—18 mm.



Fig. 16.

C. cingulata Calman,
maxilliped 3.

19. *C. thomsoni* Calm. 1907 *C. t.*, Calman in: Tr. zool. Soc. London, v. 18: 1 p. 7, 14 t. 5 f. 12—16.

Near to *C. levis* (nr. 8). Pseudorostral lobes short, with eyelobe reaching to or beyond their apices; antero-lateral tooth minute. Carapace pitted, rugose, with dorsal carina flattened or faintly doubled to the rear; on either side behind the middle a short groove is limited by a faint ridge running obliquely downwards; a slight short ridge runs backward from the antero-lateral corners. Pedigerous segment 1 exposed at the sides in ♀, not in ♂, 2nd with dorsal carina, 3^d to 5th with lateral carinae. Pleon segments with dorsal and lateral carinae and articular processes in ♀, the lateral carinae wanting in ♂. Eyelobe apparently short, occupied by several corneal lenses. Peraeopod 1, 2nd joint not distally produced but carrying 2

plumose setae at the apex, length a little less than rest of limb, 7th joint about two-thirds of 5th, three-fourths of 6th in length. Peduncle of uropods very little longer than exopod, which is a little longer than the endopod; the latter having 4 spines on its medial margin in ♀, plumose setae and 9 spines in ♂, the apex bare, acute. L. ♀ 6 mm, ♂ 6.75 mm.

New Zealand, Bay of Islands; depth 15 m.

20. **C. australis** O. Sars 1887 *C. a.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 12 t. 1 f. 1—20 | 1907 *C. a.*, Calman in: Tr. zool. Soc. London, v. 181 p. 7.

Integument highly indurated, granular or squamose or reticulate. Pseudorostral lobes short, obtusely truncate, not produced beyond the long narrow eyelobe; antero-lateral corners reaching level of apices, a short carina running back from the short tooth. Carapace with dorsal carina down the middle, an obliquely longitudinal ridge on either side limiting the gastric region and connected with this a slight curved prominence passing down the sides to the rear. Pedigerous segment 2 firmly connected with the carapace, following segments abruptly lower, 4th and 5th with 3 carinae. Pleon with median carina on all segments, 3 carinae on the first two, articular processes as usual. Eyelobe with 7 or more corneal lenses on the slightly tumid apex, pigment dark. Antenna 1, 2nd and 3^d joints subequal, flagellum 2-jointed, accessory minute, 1-jointed. Antenna 2 ♀ 2-jointed (text, undivided in fig.) Upper lip slightly emarginate. Lower lip with apices slightly incurved, armed with spatulate spines. Maxilla 1, palp ending in 2 long but unequal filaments. Maxilliped 1, epipod with 14 branchial leaves, exopod ending in an indurated lamella armed with six curved setae and encircled by a very thin and pellucid border. Maxilliped 3, 2nd and 4th joints apically much produced. Peraeopod 1, 2nd joint longer than rest of limb, its distal half abruptly narrowed, not or scarcely produced at apex, 6th joint equal to 5th, longer than 7th. Peraeopod 2 short, with large 1st joint. Peduncle of uropods shorter than the exopod, equal to the endopod, which has the medial margin finely serrulate, each branch with apex acute, bare. Colour (as preserved) light brown, with darker shadings, especially in front. L. ♀ (not fully adult) 8 mm, ♂ (not fully adult) 10 mm.

Australia, Port Philip; depth 69 m.

21. **C. quadrituberculata** Zimmer 1907 *C. q.*, Zimmer in: Zool. Anz., v. 31 p. 367.

Integument with larger granules in reticulate arrangement among smaller ones. Pseudorostral lobes not reaching in advance of the eyelobe; antero-lateral corners acute. Carapace somewhat compressed, with median rounded keel, flanked by tubercles, one rather elongate pair on the pseudorostral lobes outside the frontal lobe, the other behind the first about two-thirds of the way down the length of the carapace. Pedigerous segment 1 completely fused with carapace. A median carina runs from 5th pedigerous segment to end of pleon. Peduncle of uropods scarcely longer than exopod; exopod longer than endopod, which has spines on the medial margin. Colour white. L. ♂ (not adult) 12 mm. ♀ unknown.

South Georgia; depth 75 m.

22. **C. gigas** Zimmer 1907 *C. g.*, Zimmer in: Zool. Anz., v. 31 p. 367.

Integument finely reticulate. Pseudorostral lobes meeting in a point in front of the long eyelobe; antero-lateral corners acute. Carapace very tumid, in front half medio-dorsally elevated between 2 deep depressions;

frontal lobe flanked by a pair of blunt tubercles; behind it sublaterally stands a longer pair, sloping down as it were from the raised hinder division of the carapace; below these tubercles the pseudorostral lobes have a longitudinal rounded ridge. The hind margin of the carapace is obtusely excavate, the fusion with 1st pedigerous segment dorsally well marked. A median carina extends from the 4th pedigerous segment to end of pleon. The eyelobe shows two corneal lenses in front. Antenna 1 extremely small. Peduncle of uropods slightly longer than the endopod, which is rather longer than the exopod and has on the medial margin a close-set series of spines increasing in size towards the apex. Colour white. L. ♀ (with marsupium) about 15 mm.

German South Pole Exp., Winter Station (lat. 66° 2' S., long. 89° 38' E.).

23. *C. costata* Calm. 1904 *C. c.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 168 t. 3 f. 39—53 | 1907 *C. c.*, Calman in: Tr. zool. Soc. London, v. 181 p. 7.

Pseudorostral lobes meeting well in front of the large subcircular eyelobe; antero-lateral corners obtuse, especially in the ♂. Carapace compressed, anterior half with carina flanked by a depression on either side; behind and below these the carapace in ♀ is beset with longitudinal ridges, 12 or more in number, formed by rows of minute granules, in the ♂ only hinder dorsal third of carapace occupied by the ridges, a vertical ridge separating them from the irregularly granulated anterior portion. Pedigerous segment 1 exposed, less in ♂ than in ♀, segment 2 with median crest in ♀, feeble in ♂, segments 4 and 5 each with submedian pair of tubercles in ♀, these segments in ♂ depressed, with prominent dorso-lateral corners. Pleon rather stout, with feeble carina in ♀. Eye pigmented, with corneal lenses, which at least in ♂ are large and distinct. Antenna 1 very short, 3^d segment rather longer than 2nd, flagellum 2-jointed, accessory minute. Antenna 2 ♀ unjointed, with 2 plumose setae. Maxilliped 3, 2nd joint much bent, without the narrow distal process rather longer than rest of limb, process of 4th joint large reaching much beyond that of the 2nd joint, 5th and 6th joints broad, 7th almost rudimentary. Peraeopod 1 very short, 2nd joint not apically produced, about as long as rest of limb. Peraeopod 2 in ♂ having front margin of 2nd joint serrate with recurved teeth, apparently wanting in ♀. Peduncle of uropods a little longer than the subequal rami in ♀, but equal to those of the ♂; all the rami have an apical spine, the endopod of ♀ has also a subapical spine; the much broader endopod of ♂ is fringed on the medial margin with serrate spines, with a short interval between the series and three on the oblique apex. L. ♀ adult 3.75 mm, ♂ adult 3.9 mm.

Gulf of Manaar, depth 15—16 m.

24. *C. bistriata* Zimmer 1902 *C. b.*, Zimmer in: Zool. Jahrb., Syst. v. 17 p. 447 ff. D—F. | 1907 *C. bisplicata*, Calman in: Tr. zool. Soc. London, v. 181 p. 7, 17 t. 3 f. 4—15.

Pseudorostral lobes truncate, meeting just in front of eyelobe, antero-lateral tooth acute, reaching level of the apices. Carapace compressed, more or less arched in ♀, with median carina, rising especially in ♀ into a blunt tooth at hind margin (Calman), flanked by 2 pairs of parallel striae or very low keels in obliquely transverse curves, the anterior close to the frontal lobe, the second about half-way down the carapace (Zimmer), or both further back and converging behind middle of carapace (Calman), feeble and not meeting in ♂. Pedigerous segment 1 only laterally exposed and

only that in ♀, 2nd with carina forming a more or less slender tooth, curving a little forward (Calman), the other segments with a carina, which is continued along front part of the pleon, which has the usual articulations. Eyelobe a little longer than broad, with about 9 corneal lenses (Calman), 2 rather long but small and 2 large but indistinct (Zimmer). Antenna 1, 3^d joint longer than 2nd. Antenna 2 ♀ 2-jointed. Peraeopod 1, 2nd joint longer than rest of limb. Peduncle of uropods shorter than endopod which is shorter than exopod (Zimmer), subequal to the subequal rami (Calman in text, but endopod shorter than exopod in fig.) L. ♀ almost 5 mm, (Zimmer), ♀ 4.2 mm, ♂ 4.16 mm. (Calman).

New Zealand, Plenty Bay, Lyttleton Harbour, depth 2—9 m.

25. *C. triplicata* Calm. 1907 *C. t.*, Calman in: Tr. zool. Soc. London, v. 181 p. 7, 19 t. 3 f. 16—24.

Very like *C. bistriata* but with the 2 pairs of oblique ridges on the carapace here much more prominent, and a third pair starting from a pair of prominent tubercles outside the frontal lobe and running nearly vertically downwards to join a prolongation of the anterior oblique ridge which runs horizontally forwards to the anterior lower edge of the carapace; tooth at end of median carina serrated behind, carina of 2nd pedigerous segment sinuous, with front angle blunt and hinder one overhanging the third segment; continuance of median carina here faintly marked, but 4th and 5th pedigerous segments and first three of pleon laterally carinate. Peraeopod 1 with 2nd joint longer in relation to rest of limb, uropods a little stouter. L. ♀ 4 mm, ♂ 4 mm.

New Zealand, Lyttleton Harbour, depth 2—9 m.

5. Gen. **Stephanomma** O. Sars

1871 *Stephanomma* (Sp. un.: *S. goësii*), G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 6 p. 808 | 1873 *S.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 5 p. 16 | 1907 *S.*, Calman in: Tr. zool. Soc. London, v. 181 p. 14.

No pseudorostral lobes meeting in front of the eye, or separated from the carapace even by a suture, antero-lateral tooth subacute, well advanced. Carapace not inflated. Five pedigerous segments distinct. Eye composed of numerous lenses. Maxilliped 3 with 2nd joint unusually short, 3^d longer than broad, presence of exopod in female doubtful. Uropods with one-jointed endopod.

1 species.

1. *S. goësii* O. Sars 1871 *S. g.*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 6 p. 808 | 1873 *S. g.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 5 p. 16 t. 4 f. 17—23.

Integument much indurated, finely faceted, pitted and reticulate. Carapace with short rounded keels behind each antero-lateral tooth, a central carina from end to end, raised behind the eye and there presenting a forward-pointing tooth, this flanked by a pair of depressions with a pair of tubercular elevations. Pedigerous segment 1 short strap-shaped, 2nd with outstanding side-plates extended forwards over hind margin of the carapace, 3^d and 4th with similar side-plates extending backwards, 2nd to 5th with median carina, the 5th and the first 5 segments of the pleon having also on each side 3 strongly marked carinae. The telsonic segment is produced triangularly between the bases of

the peduncles of the uropods. Eye situated on the broad blunt-ended equivalent of an eyelobe, and composed of 10 corneal lenses encircling a central one. Below this region a semicircular orifice leading to the branchial chambers can be closed by the triangular exopods of maxilliped 1. Antenna 1 small, the three joints of the peduncle subequal in length, flagellum very short, accessory undeveloped. Maxilliped 3, 2nd joint scarcely longer than the 3^d and 4th combined, not apically produced, 4th joint broadly produced to a pointed apex. Peraeopod 1 slender, attached unusually far down on the sides under the carapace. Peraeopod 2 little more than half as long as the 1st. Peduncle of uropods quite smooth, considerably longer than the subequal rami; the lanceolate endopod with medial margin finely serrate and carrying a row of 5 short spines along the middle. L. ♀ adult about 9.5 mm, or including uropods about 11 mm, ♂ unknown.

West Indies, St. Martin.

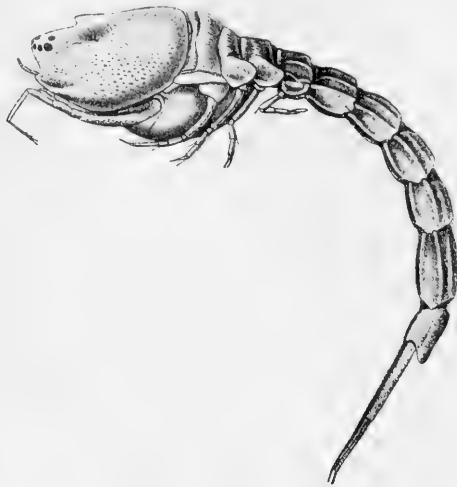


Fig. 17.
S. goëssii (♀) Sars.

6. Gen. *Zygosphon* Calman

1907 *Zygosphon*, Calman in: Tr. zool. Soc. London, v. 181 p. 25.

Pseudorostrum with frontal projections wide apart. Branchial siphons very long and widely separated. All five pedigerous segments free. Uropods with endopod of two joints, the second joint much the shorter.

1 species.

1. *Z. mortenseni* Calm. 1907 *Z. m.*, Calman in: Tr. zool. Soc. London, v. 181 p. 25 t. 7 f. 1—19.



Fig. 18.
Z. mortenseni (♀) Calman.

Pseudorostrum with plates meeting in front of eyelobe, then broadly divergent with antero-lateral tooth on each side in advance of their short

prominences. Carapace with sides more or less straight, which bulge to the rear in ovigerous specimens; on each side a lozenge-shaped depression bounded by ridges faint in ♀ and still more so in ♂; from the front corner of the depression a ridge runs forward on to the side of the pseudorostrum; the hind margin is obtusely raised. The last 3 pedigerous segments are much lower than the 1st and 2nd, and diminish much in width successively. The



Fig. 19.

Z. mortenseni (♀) Calman, front.

telsonic segment is well produced between the uropods and is not shorter than the segment next preceding it. The eyelobe is broad, notched or emarginate in front, with 2 separate masses of pigment but no distinct lenses in ♀, but deeply pigmented and with 9 corneal lenses in ♂. Antenna 1,



Fig. 20.

Z. mortenseni (♂) Calman, front.

1st joint as long as 2nd and 3^d combined, 3^d twice as long as 2nd. Mandible with 12 spines in spine-row. Maxilla 1, palp with 2 apical filaments. Maxilliped 1, epipod with very few branchial leaflets in ♀, about 9 in ♂, exopod ending in a cone of spirally coiled membrane capable of being extended to a great length forward and outward. Maxilliped 3, 2nd joint bent, externally produced into a long pointed lobe, 4th joint also expanded externally into a very large curved lobe. Peraeopod 1, 2nd joint in ♂ about as long

as the rest combined, in ♀ about two-thirds of their length. Peraeopod 2, 2nd joint a little less than the rest combined, 5th and 6th joints subequal, very short. Uropods slender, length of exopod in ♀ nearly, in ♂ a little over, three-fifths that of peduncle, endopod three-fourths as long as exopod, 2nd joint rather over a third as long as 1st, medial margin with 3 spines in ♀, 6 in ♂. L. ♀ 2.67, ♂ 2.7 mm.

Gulf of Siam, depth 9—19 m; Gulf of Manaar.

7. Gen. *Iphinoë* Bate

1856 *Halía* (Sp. un.: *H. trispinosa*) (non Risso 1826, Mollusca), Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 458 | 1856 *Venilia* (Sp. un.: *V. gracilis*) (non Duponchel 1829, Lepidoptera), Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 460 | 1856 *Iphinoë* (Sp. un.: *I. trispinosa*), Bate in: Ann. nat. Hist., ser. 2 v. 18 p. 187 | 1856 *Cyrianassa* (Sp. un.: *C.*

gracilis), Bate in: Ann. nat. Hist., ser. 2 v. 18 p. 187 | 1867 *Iphithoë* (err. pro: *Iphinoë*), A. M. Norman in: Rep. Brit. Ass., v. 36 p. 201 | 1869 *Iphinoë*, A. M. Norman in: Rep. Brit. Ass., v. 38 p. 272 | 1878 *I.*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 495 | 1886 *Sphinoë* (err. pro: *Iphinoë*), R. Koehler in: Bibl. hautes Études, v. 32 nr. 4 p. 23 | 1893 *Iphinoë*, T. Stebbing in: Int. sci. Ser., v. 74 p. 302 | 1895 *Iphinoë*, H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c. p. 52 | 1899 *I.*, G. O. Sars, Crust. Norway, v. 3 p. 12 | 1907 *I.*, Calman in: Bull. Mus. Paris, p. 118 | 1908 *Iphinoë*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 162 | 1910 *Iphinoë*, T. Stebbing in: Ann. S. Afr. Mus., v. 6 iv p. 410.

Pseudorostral lobes meeting in front of the eyelobe. Carapace narrow, without lateral cornua. First pedigerous segment short but distinct. Only the first pair of peraeopods carrying exopods in either sex; second peraeopods with the third joint obsolete. Endopod of uropods two-jointed, the second joint usually the longer.

8 species.

Synopsis of species:

- 1 { Uropod with 1st joint of endopod longer than 2nd 1. *I. crassipes*
- 1 { Uropod with 1st joint of endopod shorter than 2nd — 2.
- 2 { Maxilliped 3 with 5th joint distally widened 2. *I. zimmeri*
- 2 { Maxilliped 3 with 5th joint not distally widened — 3.
- 3 { Carapace slender — 4.
- 3 { Carapace comparatively short and stout — 7.
- 4 { Maxilliped 3 with 2nd joint much more than twice as long
as the rest of the appendage 3. *I. brevipes*
- 4 { Maxilliped 3 with 2nd joint not much more than twice as
long as the rest of the appendage — 5.
- 5 { Carina of carapace not serrate in ♂, with not more than
6 teeth in ♀ 5. *I. trispinosa*
- 5 { Carina of carapace serrate in both sexes, with more than
6 teeth in ♀ — 6.
- 6 { Serration of carina not limited to front half in ♀, limited
to hinder half in ♂¹⁾ 4. *I. serrata*
- 6 { Serration of carina limited to front half in both sexes 6. *I. tenella*
- 7 { Peraeopod 2 uncommonly long, rather longer than the 3d 7. *I. robusta*
- 7 { Peraeopod 2 uncommonly short, shorter than the 3d 8. *I. inermis*

1. *I. crassipes* H. J. Hansen . 1895 *I. c.*, H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c. p. 53 t. 6 f. 4, 4a—f | 1904 *I. macrobrachium*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 173 t. 4 f. 72—75 | 1910 *I. crassipes*, T. Stebbing in: Ann. S. Afr. Mus., v. 6 iv p. 412 t. 19.

Pseudorostral lobes upturned, distally forming a semicircular cavity, the produced lateral corners of which carry convergent tufts of setae; antero-lateral corners acute in ♀, not produced in ♂. Carapace with median keel and 2 weak pairs of lateral keels anteriorly. Pedigerous segments 3 and 4 of ♂ as in *I. zimmeri* (nr. 2) and *I. brevipes* (nr. 3). Telsonic segment roundly produced between the uropods at their base and showing a dorsal depression. Eyelobe rounded, with 10 corneal lenses, 2 of them central, closely united. Antenna 1, 3d joint longer than 2nd, as long as 1st, flagellum with 8 filaments fringing 1st joint, 2nd tipped with long curved spine and 2 filaments. Maxilla 1 with 2 filaments at end of palp, and a distally plumose seta on lateral margin of lateral lobe. Maxilliped 3, 2nd joint produced to middle of the broad

¹⁾ Or sometimes wanting.

prolongation of the 4th joint, this process itself reaching much beyond the 5th joint, its lateral margin fringed with 12 plumose setae, the apical 2 much the longest. Peraeopod 1, 2nd joint much shorter than rest of limb, 6th shorter than 5th, little longer than 7th. Peraeopod 2, terminal joint nearly as long as 3 preceding joints combined. Peduncle of uropods longer than the subequal rami, its medial margin in adult ♂ closely fringed with spines, as is also the 1st joint of the endopod, which is more than twice as long as the narrow



Fig. 21.
***I. crassipes* Hansen, maxilliped 3.**
(after Stebbing).

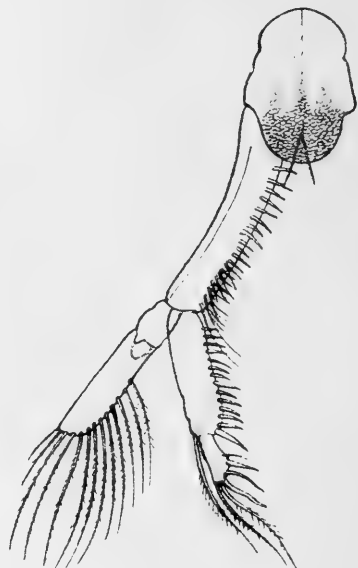


Fig. 22.
***I. crassipes* Hansen, uropod and telsonic segment**
(after Stebbing).

2nd joint, that carrying distally 4 spines and 2 long setae; in younger specimens the relations are different, the 1st joint not nearly twice as long as the 2nd, and in *I. macrobrachium* the exopod much shorter than the endopod. *I.* ♂ adult 8 mm, ♂ juv. 3.2 mm, ♀ juv. 1 mm.

Gulf of Guinea, Anecho (Togo); Gulf of Manaar, depth 8—13 m (*I. macrobrachium*); South Africa, depth 75 m.

2. ***I. zimmeri* Stebb.** 1910 *I. z.*, T. Stebbing in: Ann. S. Afr. Mus., v. 6 iv p. 411 t. 18.

♂. Pseudorostral lobes obliquely subtruncate, meeting a little in front of the semicircular eyelobe. Carapace smooth; 3^d and 4th pedigerous segments with articulating arrangement strongly developed; 5th segment of pleon distally narrowed, telsonic segment with dorsal depression. Eye obscure. Antenna 1, 3^d joint a little longer than 2nd. Maxilliped 1 with the branchial leaflets numerous, closely contiguous. Maxilliped 2, 2nd joint gradually widening and then rather abruptly narrowing to the apex. Maxilliped 3, distal process of 2nd joint not nearly reaching apex of distal process of 4th joint, 5th joint unusually widened distally on the medial side, as in *Heterocuma sarsi* (p. 48). Peraeopod 1, 2nd joint narrowed distally, nearly as long as rest of limb and subequal to peraeopod 2, in which the 2nd joint is distally widened with

rounded distal process simulating and perhaps representing a short 3^d joint. Peduncle of uropods subequal to the rami; endopod with 1st joint much

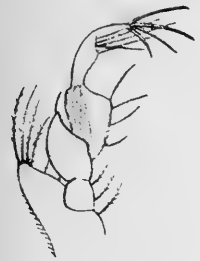


Fig. 23.
I. zimmeri Stebbing,
maxilliped 3.

stouter than 2nd, about half as long, fringed on medial margin with 10 pectinate spines, the apical much the longest, 2nd joint fringed with a dozen spines, the lowest the largest, followed by an oblique series of 10 spinules extending to the acute apex which carries an inward pointing spine. L. 9 mm. A specimen without pleopods, L. 5 mm, agrees as to the uropods with *I. robusta*, H. J. Hansen (nr. 7).

South Africa, lat. 32° 53' 30" S.,
long. 28° 11' 00" E.; depth 75 m.

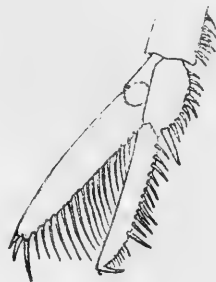


Fig. 24.
I. zimmeri Stebbing,
uropod.

3. **I. brevipes** H. J. Hansen 1895 *I. b.*, H. J. Hansen in: *Ergeb. Plankton-Exp.*, v. 2 G. c. p. 54 t. 6 f. 5, 5a—h | 1908 *I. africana*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 163 t. 37 f. 17—33 | 1910 *I. brevipes*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 6 iv p. 410.

Pseudorostral lobes rather short, horizontal, acute at apex, then truncate, then emarginate; antero-lateral corners acutely produced in ♀. Carapace very slender, nearly three times as long as high, lower margin for a short space anteriorly serrate, otherwise quite smooth, with no distinct median carina, which is confined to the pleon segments, but sometimes having a longitudinal medio-dorsal row of denticles beginning behind the eyelobe and extending half the length of the carapace (Zimmer); the pedigerous segments quite smooth. Eyelobe rounded, eye darkly pigmented, corneal lenses indistinct. Antenna 1, 3^d joint longer than 2nd. Antenna 2 in ♀ 1-jointed, with 3 or 4 plumose setae, in ♂ reaching to end of pleon. Maxilliped 3, 2nd joint unusually long, but distal process moderately produced, rest of limb little more than one-third as long as 2nd joint, 4th joint moderately produced, 5th not specially widened. Peraeopod 1, 2nd joint considerably longer than rest of limb, 7th joint nearly equal to 6th. Peraeopod 2 very short, shorter than peraeopod 3, 2nd joint abnormal, little longer than broad, the next joint with strong spine on produced truncate apex, 3^d joint wanting. Peduncle of uropods in immature ♀ equal to, in ♂ adult longer than the equal rami, exopod robust, with numerous setae on margins and blunt apex, endopod in ♂ with 1st joint little longer than broad, about half as long as the narrow second joint, carrying short spines on medial margin and a long apical spine, the 2nd joint fringed with spines successively larger to the long terminal spine. Colour a clear, almost pellucid, grey. L. ♂ adult 8.6 mm, ♀ immature 6.6 mm, ♀ ovigerous about 12—18 mm, ♂ adult 15 mm.

Gulf of Guinea, Cotonu; Great Fish Bay; South Africa, depth 44—62 m.

4. **I. serrata** (Norm.) 1867 *Iphithoë* s., A. M. Norman in: *Rep. Brit. Ass.*, v. 36 p. 201 | 1869 *Iphinoë* s., A. M. Norman in: *Rep. Brit. Ass.*, v. 38 p. 272 | 1878 ?*I.* (misprint *Ihpinoë*) *gracilis* (part.) var. s., G. O. Sars in: *Arch. Naturv. Kristian.*, v. 3 p. 496 t. 10—14 | 1886 *Sphinoë* s., R. Koehler in: *Bibl. hautes Études*, v. 32 nr. 4 p. 23 | 1899 ?*Iphinoë* s., G. O. Sars, *Crust. Norway*, v. 3 p. 14 | 1905 *I. s.*, Calman in: *Sci. Invest. Fish. Ireland*, 1904 app. 1 p. 16 | 1907 *I. s.*, Calman in: *Bull. Mus. Paris*, nr. 2 p. 118.

Animal very long and slender. Pseudorostral lobes well produced, slightly bent upwards, obliquely truncate, crenate, ciliated; antero-lateral corners

acute. Carapace twice and a half (Norman), about twice (Sars), as long as high, median carina in ♀ with 13 to 20 forward pointing teeth, successively larger to the front, where 2 or 3 are sometimes separated from the main series, which may or may not reach the hind margin; in ♂ (Sars) pseudorostral lobes shorter, more level, antero-lateral corners obtuse, carapace more compressed, sometimes entirely without serrate carina, sometimes with one but its serrations not reaching the frontal lobe. First pedigerous segment chiefly visible in dorsal view, 2nd very large, all five and the pleon segments with median carina. Eyelobe of ♀ ending in 2 little points, eye red-brown, with 9 corneal lenses in ♂, those in ♀ smaller and less distinct. Antenna 1, 3^d joint longer than 1st, which is longer than 2nd, flagellum 1-jointed, with minute 2-jointed accessory. Antenna 2 of ♀ 2-jointed with 4 setae on the large 1st joint. Lower lip, with apices not rounded, armed with 5 peculiar spines. Maxilliped 1, branchial leaflets numerous. Maxilliped 3, 2nd joint with distal process reaching middle of 4th, and fringed on medial margin with long plumose setae, the 4th fringed in like manner on lateral margin of its prolongation. Peraeopod 1 slender, 2nd joint shorter than the rest of limb, having both margins denticulated (A. M. Norman), denticulation not shown on lateral margin nor mentioned in text (G. O. Sars), 5th and 7th subequal and about one-third shorter than 6th (A. M. Norman), 7th figured about one-third shorter than the subequal 5th and 6th (G. O. Sars). Peraeopod 2 very short, with a joint missing, the 2 joints succeeding the 2nd having each a long apical spine, terminal joint not longer than 2 preceding joints combined. Peduncle of uropods longer than the slightly unequal rami, its medial margin in ♀ armed with 12—14 long spines, in the ♂ with many more in 2 or 3 rows; exopod broad with many plumose setae on medial margin of 2nd joint and round the apex, the slightly shorter endopod with 1st joint about twice as broad but little over half as long as 2nd, carrying 3 or 4 small and a long apical spine, 2nd joint fringed in ♀ with 13, in ♂ with 16 spines, increasing in size to the apex. Colour pale straw yellow, flecked with brown. L. ♀ 12 mm, ♂ 10.5 mm.

Shetland Isles, depth 55—147 m (A. M. Norman); Mediterranean, Bay of Naples etc. (G. O. Sars); W. of Ireland, depth 31—37 m (Calman).

5. *I. trispinosa* (Goodsir) 1843 *Cuma t.*, Goodsir in: Edinb. new phil. J., v. 34 p. 126 t. 3 f. 1—7 | 1853 *C. t.*, T. Bell, Brit. stalk-eyed Crust., p. 329 tf. | 1856 *C. t.*, W. Thompson, Nat. Hist. Ireland, v. 4 p. 392 | 1856 *Halia t.* + *Venilia gracilis*, Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 458 t. 14 f. 5; t. 15 f. 5; p. 460 t. 15 f. 7 (♂) | 1856 *Iphinoë t.* + *Cyrianassa g.*, Bate in: Ann. nat. Hist., ser. 2 v. 18 p. 187 | 1863 *Iphithoe t.* + *C. g.*, A. M. Norman in: Tr. Tyneside Club, v. 5 iv p. 271, 274 | 1869 *Iphinoë g.* (♂ of *I. trispinosa*), A. M. Norman in: Rep. Brit. Ass., v. 38 p. 272 | 1873 *Iphithoe trispinosa*, P. Fischer in: Act. Soc. Bordeaux, ser. 3 v. 8 v p. 424 | 1878 *Iphinoë gracilis* (part.), G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 496 | 1886 *Sphinoë serrata*, R. Koehler in: Bibl. hautes Études, v. 32 nr. 4 p. 23, 60 | 1893 *Iphinoë gracilis var. macotica*, Sowinski in: Mém. Soc. Kiew, v. 13 p. 357 t. 3 f. 4 | 1893 *I. m.*, Butschinsky in: Zool. Anz., v. 16 p. 386 (embryology) | 1898 *I. gracilis var. m.*, Sowinski in: Bull. Ac. St.-Petersb., ser. 5 v. 8 p. 374 t. 3 f. 4 | 1899 *I. trispinosa*, G. O. Sars, Crust. Norway, v. 3 p. 14 t. 5, 6 | 1901 *I. gracilis*, S. Zernow in: Annuaire Mus. St.-Petersb., v. 6 p. 566 | 1905 *I. trispinosa*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 15 | 1907 *I. t.*, Calman in: Bull. Mus. Paris, p. 118 | 1909 *I. t.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 ii p. 26 | 1912 *I. t.*, Calman in: P. U. S. Mus., v. 41 p. 604.

In both sexes very long and slender. Pseudorostral lobes horizontal, acute; antero-lateral corners triangular in ♀, obtuse in ♂. Carapace of ♂

quite smooth above, in ♀ with the hinder half of median carina, rising from back to front and there followed by a row of 3 or 4 little denticles. Pedigerous segment 1 distinct dorsally, covered below by advanced sides of the large 2nd segment. Pleon longer (G. O. Sars), generally not longer (Calman and figures by Sars) than the front division of the body. Eye with corneal lenses prominent and much more distinct in ♂ than in ♀. Maxilliped 3 as in *I. serrata* (nr. 5) but perhaps with relatively longer 2nd joint and less developed prolongation of the 4th. Peraeopod 1, 2nd joint about as long as or longer than the rest of limb, with both margins showing some denticulation. Peraeopod 2 much as in *I. serrata*, with which the uropods also agree. L. ♀ 10 mm, ♂ somewhat less.

Norway, very rare; Kattegat; Shetland Isles, depth 55--147 m, and ♂ in towing-net; Bay of Biscay; Great Britain and Ireland, shallow water to 26 m; Cap Breton, depth 48--65 m.

6. *I. tenella* O. Sars 1878 *I. t.*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 505 t. 15, 16 | 1905 *I. t.*, (with ?*I. trispinosa*), Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 15 | 1907 *I. t.*, Calman in: Bull. Mus. Paris, p. 118.

Body very long and slender. Pseudorostral lobes comparatively short, horizontal; antero-lateral corners acute in ♀, obtuse in ♂. Carapace with front half of carina forming several teeth, successively larger to the front, more numerous in ♀ than in ♂. Eye well developed. Antenna 1, 3^d joint longer than 2nd, shorter than 1st, both flagella 2-jointed, the accessory minutely. Maxilliped 3 with process of 4th joint weak and carrying few setae. Peraeopod 1, the slender 2nd joint shorter than rest of limb, 5th longer than 6th, and 6th than 7th. Peraeopod 2 with terminal joint considerably longer than 2 preceding joints combined. Peduncle of uropods considerably longer than the equal rami, which are similar in armature to those of *I. trispinosa*, but with more spines (8 instead of 5) on the first joint of the endopod in the male, the joint itself much more than half as long as the second. L. ♀ 7 mm, ♂ about 8 mm.

Mediterranean, Goletta, Syracuse, Naples, Spezia.

7. *I. robusta* H. J. Hansen 1895 *I. r.*, H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c. p. 52 t. 6 f. 3, 3a—d.

Pseudorostral lobes short, with minute apical point, otherwise truncate with rounded corners; antero-lateral corners not produced. Carapace short and stout, with feeble medio-dorsal furrow flanked by pair of weak carinae, which are met at about the middle by a pair of lateral furrows running back from the front and then curving upwards. Median furrow and carinae continued on the pedigerous segments and with diminishing vigour on the first 4 pleon segments. Last 3 pedigerous segments with 3 pairs of lateral carinae, 2 above and 1 weaker below. Pleon segments 1—4 have also a feeble subdorsal pair of carinae; pleon segment 5 has only a single median keel. Eyelobe broader than long, apically pointed, number of lenses uncertain. Antenna 1, 3^d joint not longer than 2nd, or than the flagellum, which has a group of sensory filaments on the 1st joint and 2 long-olfactory setae on the 2nd, accessory minute, 1-jointed. Maxilliped 3, 2nd joint bluntly produced, 4th with only 2 plumose setae on its broadly rounded, not elongate process, 5th fusiform. Peraeopod 1, 2nd joint little longer than rest of limb, 7th nearly half as long as 6th. Peraeopod 2 long and slender, a little longer than the 3^d. Peduncle of uropods little longer than the subequal rami, with

numerous spines on medial margin; exopod stouter but scarcely longer than endopod, in which the 1st joint is about three-fourths as long as the more slender 2nd, with 9 and 11 spines on them respectively, each apical spine the longest. Colour greyish, with irregularly distributed red-brown spots. L. ♂ adult 6.2 mm, ♀ unknown.

Gulf of Guinea, Anecho (Togo).

8. ***I. inermis*** O. Sars 1878 *I. i.*, G. O. Sars in: Arch. Naturv. Kristian., v. 8 p. 508 t. 17, 18.

Pseudorostral lobes rather short, apically truncate; antero-lateral corners acute in ♀, rounded off in ♂. Carapace not very elongate, with low carina, but no teeth in either sex. Pedigerous segment 2 large, laterally acutely produced over lower part of segment 1 on to the carapace. Eyelobe broader than long, prominent in ♂ with 9 corneal lenses of which the middle one is very large. Antenna 1, 3^d joint nearly as long as 1st, a little less than twice the 2nd, flagellum 1-jointed, accessory minute, 2-jointed. Maxilliped 3, 2nd joint apically produced nearly to the end of the 4th, which only reaches half way along the 5th but is fringed with many plumose setae. Peraeopod 1 of moderate length, 2nd joint as long as rest of limb, 4th and 5th joints equal, 6th and 7th successively a little shorter. Peraeopod 2 scarcely as long as the 3^d pair. Peduncle of uropods decidedly longer than the rami, the exopod a little longer than the endopod, of which the 1st joint is about two-thirds as long as the second and carries 4 graduated spines, among which in the ♂ 4 spinules are distributed; the narrow 2nd joint in the ♀ has 11 graduated spines and in the ♂ a considerably larger number. Colour red-yellow with brown and chalk-white shadings. L. ♀ 9 mm, ♂ 8 mm.

Goletta, depth a few fathoms.

8. Gen. **Heterocuma** Miers

1879 *Heterocuma*, Miers in: P. zool. Soc. London, p. 22, 57 | 1893 *H.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 304 | 1895 *H.*, H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c. p. 56 | 1905 *H.*, (part.), Calman in: Siboga-Exp., pars 36 p. 6, 8 | 1908 *H.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 165 | 1910 *H.*, Calman in: Ann. nat. Hist., ser. 8 v. 6 p. 612.

Pseudorostral lobes not strongly produced; first pedigerous segment only dorsally distinct; telsonic segment not produced between bases of the uropods. Eye present. Antenna 1 with third joint longer than second, flagella two-jointed. Branchial leaflets numerous, in a straight series. Maxilliped 3 with second and fourth joints distally produced laterally, the fifth distally widened in the medial direction. Second and third peraeopods in both sexes carrying imperfectly developed exopods. Pleopods of male with lateral margin of endopod not produced into a narrow process. Endopod of uropods two-jointed, first joint the longer.

2 species.

Synopsis of species:

- | | | |
|---|--|--------------------------------|
| { | Carapace not granulariferous | 1. <i>H. sarsi</i> |
| { | Carapace granulariferous | 2. <i>H. granulatum</i> |

1. ***H. sarsi*** Miers 1879 *H. s.*, Miers in: P. zool. Soc. London, p. 22, 58 t. 3 f. 3 | 1895 *H. sarsi*, H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c. p. 56 | 1910 *H. sarsi*, Calman in: Ann. nat. Hist., ser. 8 v. 6 p. 612 t. 10 f. 1—13.

Pseudorostral lobes blunt, reaching little beyond the eyelobe; antero-lateral corners obtuse, especially in the ♂, and not reaching level with apices of pseudorostrum. Carapace not elongate, smooth except for median carina which is flanked by shallow depressions in front half and becomes doubled in the hinder half. First pedigerous segment only exposed dorsally, this and the rest devoid of carinae, 3^d and 4th segments in the ♂ with strong lateral articulation. Pleon segments with feebly developed medio-dorsal and lateral carinae, telsonic segment with dorsal depression. Eyelobe little longer than broad, with large dark eye. Antenna 1 stout, 1st joint as long as 2nd and 3^d combined, 3^d a little longer than 2nd. Mandibles with many spines in spine-row. Maxilla 1 with 2 apical filaments to the palp. Maxilliped 3, 2nd joint with medial margin produced into a short tooth. Peraeopod 1, 2nd joint a little shorter than rest of limb, with a pair of stout spines on medial edge near the base, and medial margin distally produced into a small tooth. Peraeopod 2, 2nd joint with setose stiliform exopod extending just beyond it, the next joint absent or coalesced. Peraeopod 3, 2nd joint with similar exopod not extending beyond its middle. Peduncle of uropods slightly shorter than exopod, subequal to the endopod, which is setose on the lateral margin, the longer 1st joint, like the rather shorter and much narrower 2nd, carrying about a dozen spines successively larger towards the abruptly larger apical spine. L. ♂ adult 18 mm, ♀ immature 17 mm.

Corean and Japanese Seas; lat. 32° 41' — 33° 19' N., long. 128° 56' — 129° 7' 5 E., depth 73—91 m.

2. *H. granulatum* Miers 1879 *H. sarsi* var. *granulata*, Miers in: P. zool. Soc. London, p. 22, 58 | 1910 *H. s.* var. *g.*, ?*H. g.*, Calman in: Ann. nat. Hist., ser. 8 v. 6 p. 614 | 1912 *H. s.* var. *g.*, Calman in: P. U. S. Mus., v. 41 p. 612.

Like *H. sarsi*, but carapace dorsally carrying small tuberculiform granules, largest along the median carina, gradually disappearing towards the lateral margins; first 5 pleon segments with strongly marked dorsal, dorso-lateral and lateral pairs of carinae, and a feeble ventro-lateral pair; the appendages, especially the 1st peraeopods and the uropods a little more elongated.

Corean Channel, lat. 32° 41' N., long. 128° 57' E., depth 73 m, off Goto Island, Korea Strait, depth 171 m.

9. Gen. *Cumopsis* O. Sars

1878 *Cumopsis*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 465, 511 | 1893 *C.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 302 | 1908 *C.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 159 | 1909 *C.*, Stappers in: Cellule, v. 25 p. 369 (alimentary system).

Pseudorostral lobes little produced. All five pedigerous segments distinct. Telsonic segment not produced between the uropods. Eye well developed. First antenna of ♂ with dense whorl of filaments round swollen base of the flagellum. Third maxilliped with second joint not apically produced. Second and third peraeopods with very small setiferous exopods. Pleopods with process on lateral margin of the endopod. Uropods elongate, endopod 2-jointed, first joint longer than second, first joint of exopod rather long. Hepato-pancreatic glands with two pairs of lobes.

2 species.

Synopsis of species:

- { Carapace with 2 pairs of latero-dorsal arcuate folds . . . 1. *C. goodsir*
 { Carapace without lateral folds 2. *C. longipes*

1. *C. goodsir* (Bened.) ? 1856 *Cuma edwardsii* (err., non Kröyer 1846), Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 457 t. 14 f. 4 | ? 1859 *Vaunthomsonia e.*, Bate in: Ann. nat. Hist., ser. 3 v. 3 p. 273 | 1861 *Bodotria goodsir*, P. J. Beneden in: Mém. Ac. Belgique, v. 33 [nr. 3] p. 76, 77, *Bodotria goodsirii*, p. 142, 166 t. 13 f. 1—16 | 1865 *Bodotria goodsirii*, Fr. Müller in: Arch. Naturg., v. 31 p. 311—323 | 1869 *Cuma goodsiri*, A. Dohrn in: Jena. Z., v. 5 p. 56, 61, 63, 71, 75, 76 t. 2; t. 3 f. 16, 17 | 1878 & 1879 *Cumopsis g.*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 512; v. 4 p. 1 t. 19—21 | 1906 *C. g.*, A. M. Norman & T. Scott, Crust. Devon Cornwall, p. 30 | 1909 *C. g.*, Stappers in: Cellule, v. 25 p. 355.

Integument thin, flexible, finely squamose. Pseudorostral lobes meeting a short space in front of eyelobe; antero-lateral corners shortly produced in ♀ with adjoining excavation, not produced in ♂. Carapace with level dorsal line, not carinate, but from the antero-lateral corners 2 pronounced folds sweep round towards the centre, there joining a half elliptical fold which extends from behind the frontal lobe nearly to the hind margin. Pedigerous segment 1 exposed dorsally, laterally covered by the 2nd segment (carapace leaving the five posterior segments exposed as complete rings in themselves, Bate), 2nd segment having near the first a pair of semicircular dorsal folds. Telsonic segment short, truncate. Eyelobe nearly heart shaped, with dark eye and several corneal lenses. Antenna 1 with joints of peduncle successively shorter, in ♂ distally widened, both flagella 2-jointed, the accessory minutely, the principal distinguished in the ♂ by its swollen base and verticillate equipment of radiating pellucid filaments. Antenna 2 in ♀ 2-jointed, without setae on 1st joint, in ♂ the short-jointed flagellum reaching beyond the body. Lower lip with slender spines on the incurved apices. Maxilliped 3, 2nd joint large and broad, longer than rest of limb, its lateral apex carrying 5 plumose setae, 4th joint little produced, with 2 setae on lateral apex. Peraeopod 1 comparatively short, 2nd joint large, narrowing distally, 6th joint shorter than 5th. Peraeopod 2 very small, with one joint missing (the 2 anterior thoracic legs extremely long; the three posterior extremely short, and all except the last having an exopod, Bate). Peraeopods 2 and 3 each with a very small rudimentary exopod carrying 3 short setae. Peduncle of uropods very slender, much longer than the equal, linear rami, in which the 1st joint of the exopod is as long as the 2nd of the endopod; armature in spines and setae very much greater in the ♂. Colour dark violet, darkest on hinder and lower part of carapace and 5th pleon segment. L. 5 mm.

British Isles, Belgium, Mediterranean. Sea-shore and surface of sea.

2. *C. longipes* (A. Dohrn) 1869 *Cuma l.*, *C. (Bodotria) l.*, A. Dohrn in: Jena. Z., v. 5 p. 77; p. 81 t. 3 f. 1 | 1879 *Cumopsis laevis*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 8 t. 22 | 1893 *C. l.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 303 | 1906 *C. l.*, A. M. Norman & T. Scott, Crust. Devon Cornwall, p. 29.

Very like *C. goodsir*, but carapace without lateral folds, having only the semi-elliptical fold behind the frontal lobe; 2nd pedigerous segment quite smooth; antenna 1 of ♀ more elongate, with 2nd joint scarcely shorter than 1st; antenna 2 of ♀ with 1 plumose seta on 1st joint; peraeopod 1 comparatively longer and stronger, with 6th joint subequal to 5th; uropods comparatively longer; colour in ♀ more intense. L. 6 mm.

British Isles (Clyde, S. Devon, on shore sands); Mediterranean (Syracuse, Naples, Spezia); Bayonne Harbour.

Bodotriidarum genera dubia et species dubiae

Gammarus esca F. 1779 *G. e.*, J. C. Fabricius, Reise Norweg., p. 249.

Antenna 2 longer than the body, colour blackish, herring-food in Norway.
Size of *Gammarus pulex*.

Cuma fasciata E. Hesse 1868 *C. f.*, E. Hesse in: Ann. Sci. nat., ser. 5 v. 10 p. 358 (♀); p. 362 (*C. fuscata*).

Eyes black, indistinct. Colour deep rust brown mixed with bright green and a white band. L. 6 mm. Coast of France, in tidal pool.

Cuma parva E. Hesse 1868 *C. p.*, E. Hesse in: Ann. Sci. nat., ser. 5 v. 10 p. 359, 369 (♀ or juv.).

Eyes black. Colour rust brown. L. 1 mm. Coast of France, tidal pool.

Cuma punctata E. Hesse 1868 *C. p.*, E. Hesse in: Ann. Sci. nat., ser. 5 v. 10 p. 355 (♂), 369 (*C. Ponctata*).

Eyes red. Colour dull yellow with green and black markings. L. 3 mm. Coast of France, tidal pools.

Cuma rufa E. Hesse 1868 *C. r.*, E. Hesse in: Ann. Sci. nat., ser. 5 v. 10 p. 356 (♀).

Eyes black. Colour deep rust brown. L. 12 mm. Coast of France in tufts of „*Polysiphonia urceolata* Lightf“.

Cuma terginigra E. Hesse 1868 *C. t.*, E. Hesse in: Ann. Sci. nat., ser. 5 v. 10 p. 349.

Eyes prominent but generally small and indistinct. Colour of ♂ pale green, passing through pink to a pleon of golden yellow traversed by a red ray, the whole diversified by bands and points of black. Front of ♀ apple-green framed in deep black, hinder portion yellow with ray of red and black points. L. reaching 2.5 mm, Br. 1 mm.

Coast of France, in sandy pools, sometimes abundant.

Cuma folini P. Fisch. 1872 (1874) *C. Folini*, P. Fischer in: Folin & Périer, Fonds Mer, v. 2 p. 110 t. 5 f. 7, 8 | 1907 *C. F.*, Calman in: Tr. zool. Soc. London, v. 181 p. 3.

Probably the same as *Bodotria arenosa*, Goodsir (Calman).

4. Fam. **Ceratocumatidae**

1905 *Ceratocumidae*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 37 | 1912 *Ceratocumatidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 142.

Female unknown. Male with small distinct telson, unarmed; only the first two pairs of the pereopods furnished with exopods; the seventh joint in the two following pairs ending in a curved spine; pleon carrying five pairs of pleopods; uropods with one-jointed endopod.

1 genus.

1. Gen. **Ceratocuma** Calman

1905 *Ceratocuma* (Sp. un.: *C. horridum*), Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 37.

Fifth pedigerous segment without appendages; uropods very elongate.

1 species.

1. **C. horridum** Calm. 1905 *C. horrida*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 11, 37 t. 4 f. 57—75 | 1912 *C. horridus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 143.

Pseudorostral lobes horizontal, bluntly truncate, meeting for a moderate distance in front of the small eyeless eyelobe; a rather deep sinus is formed by the bifid antero-lateral corner produced as far forward as the pseudorostrum, the lower tooth initiating a long lateral ridge on the dorsally flattened carapace. This is diversified by 11 pairs of notable procurved teeth, 3 pairs submedian, the rest lateral. All five pedigerous segments are free, each except the first carrying a dorsal and a lateral pair of spine-like processes, the lateral pairs of the second and third segments being expanded at the base and hollowed beneath to receive the end of the flagellum of the second antenna. Fifth pedigerous segment without trace of limbs, having ventrally behind a median spine 2 contiguous eminences with the crescentic slit-like apertures of the vasa deferentia. The first 4 pleon segments have each a pair of blunt recurved teeth at the rear; the 5th segment is nearly three times as long as the sixth; the little round-ended telson becomes inconspicuous when closed down over the anal opening. Antenna 1 has the 1st joint large, distally widened, the flagellum 4-jointed, accessory 1-jointed, both provided with sensory hairs. Antenna 2 with last joint of peduncle nearly twice as long as the preceding joint. The fully adult character of both antennae makes it improbable that the absence of the 5th pereopods is due to immaturity. Mandibles with strong molar and numerous spines. Palp of maxilla 1 with 2 filaments. Maxilliped 1 with the epipod scantily provided with branchial leaflets. Maxilliped 2 with full number of joints. Maxilliped 3, the long 2nd joint narrowed distally, not apically produced. Pereopod 1 has 3^d joint longer than 4th, 5th equal to both combined, the short 6th furnished with 2 peculiar processes each armed with a dense tuft of radiating setae. Pereopod 2 very slender, the long 2nd joint narrowing rapidly about the middle, the 5th joint much more than twice the 6th and 7th combined. Fifth and sixth joints much longer in the 4th than in the 3^d pereopod. Pleopods feebly developed, in the South African specimen only the first pair clearly discernible, although the antennae evince maturity. Uropods two-fifths of body's length, the subequal rami more than thrice as long as the peduncle, each serrate on medial margin, tapering to a fine point, with minute terminal spine. L. 4.05 mm.

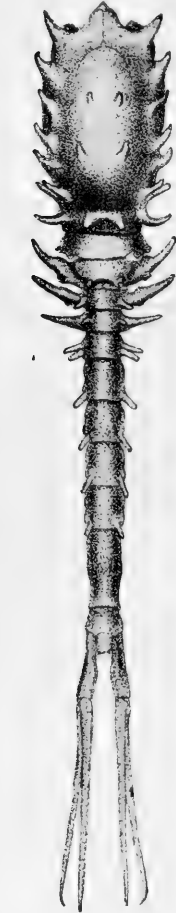


Fig. 25.

C. horridum (♂) Calman.

Irish Sea, 77 miles W. N. W. of Achill Head, county Mayo, 699 m; South Africa, Cape Natal N. by E. about 24 miles, depth 805 m.

5. Fam. **Leptocumatidae**

1912 *Leptocumatidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133.

Telson wanting. Accessory flagellum of antenna 1 very small. Antenna 2 of ♀ 3-jointed. Palp of maxilla 1 ending in 2 filaments. Pereopods 1—4

with exopods in both sexes, all well developed, except those on the 4th pair in the female. Only 3 pairs of pleopods in the male. Endopod of uropods 2-jointed.

1 genus.

1. Gen. **Leptocuma** O. Sars

1873 *Leptocuma* (Sp. un.: *L. kinbergii*), G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 5 p. 24 | 1878 & 1879 *L.*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 465; v. 4 p. 12 | 1887 *L.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 6 | 1908 *L.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 165 | 1912 *L.*, Calman in: P. U. S. Mus., v. 41 p. 615.

General form slender, elongate, diminishing very gradually from carapace to pleon. Pseudorostral lobes produced shortly or not at all in front of the semicircular eyelobe. First pedigerous segment exposed only dorsally. Exopod on peraeopod 4 of ♀ rudimentary.

2 species.

Synopsis of species:

- { Uropods, 2nd joint of endopod more than half as long as 1st 1. *L. kinbergii*
 { Uropods, 2nd joint of endopod less than half as long as 1st 2. *L. minus*

1. *L. kinbergii* O. Sars 1873 *L. k.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 5 p. 24 t. 6 f. 29—33 | 1893 *L. k.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 304 | 1907 *L. k.*, Calman in: Tr. zool. Soc. London, v. 181 p. 30 | 1908 *L. kinbergi*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 165 | 1912 *L. kinbergii*, Calman in: P. U. S. Mus., v. 41 p. 616.

Body so much compressed in front that the whole in dorsal view appears almost parallel sided. Pseudorostral lobes little or in maturity not at all advanced in front of eyelobe, apices broadly rounded and separated by a notch from the bluntly rounded antero-lateral advanced corners. Carapace very small, quite smooth. Pedigerous segment 2 infero-laterally stretching over 1st segment on to the carapace; 3^d segment below overlapping the 2nd and 4th. Telsonic segment not much shorter than the preceding segment, both narrower than those which precede. The flattened semicircular eyelobe showing no corneal lenses. Antenna 1, flagellum 3-jointed, accessory minutely 1-jointed. Peraeopod 1, 2nd joint about equal to rest of limb, 7th scarcely half as long as 6th. Peraeopod 2, 3^d joint quite short. Exopod of peraeopod 4 small, one-jointed, with small setae. Peduncle of uropods nearly but not quite so long as the laminar rami (or may equal the exopod, Calman) endopod a little longer than exopod, of which the 1st joint is not very long, while the 2nd begirt with spines and setae is somewhat longer than the first joint of the endopod; the latter joint on medial margin above has a set of 5 spines and below a graduated series of 12, the second joint about two-

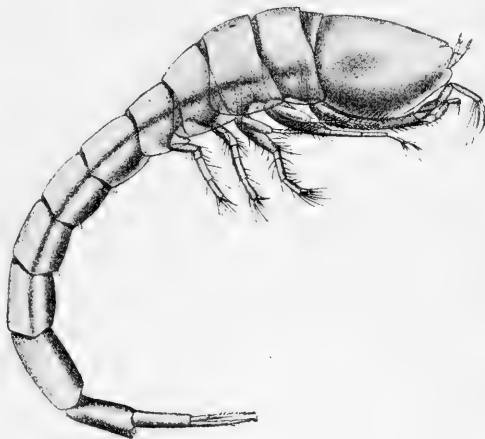


Fig. 26.
L. kinbergii (♀) Sars.

thirds as long, carrying 15 spines, of which the apical are large. The 18 spines on lateral margin of exopod's 2nd joint are blunt-ended. L. ♀ 14—22.5 mm. ♂ unknown.

South Atlantic, off mouth of Rio Plata, depth 94 m; Straits of Magellan.

2. **L. minus** Calm. 1912 *L. minor*, Calman in: P. U. S. Mus., v. 41 p. 616 ff. 14—20.

Pseudorostral lobes truncate, meeting a short space in front of the small eyelobe; with a small sinus and slightly advanced antero-lateral angle. Carapace short. Pedigerous segments 2, 3, with side-plates greatly expanded. Telsonic segment considerably shorter than the one preceding it, about $\frac{3}{4}$ ths of peduncle of uropod. Eye pigmented. Antenna 1, flagellum 2-jointed, accessory 1-jointed. Antenna 2 of ♀ 3-jointed, last joint bluntly conical, twice as long as width at base. Mandible with premolar part long, about 6 spines in spine-row. Maxilliped 1 with about 8 branchial leaflets. Maxilliped 3 with 2nd joint slightly produced. Peraeopod 1 with 2nd joint slightly longer than rest of limb, 7th little shorter than 5th or 6th. Peraeopod 2, 5th joint little longer than 4th, a little shorter than 6th and 7th combined, 7th not quite as long as 6th. Peraeopod 4 of ♀ with rudimentary exopod of 2 joints, the 2nd minute. Exopod of uropods a little shorter than the peduncle, a little longer than the endopod; 1st joint of the latter more than twice as long as the 2nd. L. ♀ 7.5 mm, ♂ 6.4 mm.

U.S.A., Wood's Hole; Gloucester Harbor, depth 15 m.

6. Fam. **Chalarostylidae** nom. nov. T. Stebbing

1912 *Hemilampropidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 143.

Telson ample, with more than 2 apical spines. Antenna 1 with both flagella well developed. Palp of maxilla 1 with 2 filaments. Peraeopods 1—4 with exopods in both sexes well developed except those on the 3^d and 4th pairs of the female which are rudimentary. Peraeopod 1 with 2nd joint much shorter than the rest of the limb. Male with only 3 pairs of pleopods. Uropods with the endopod 3-jointed.

2 genera.

Synopsis of genera:

- | | | |
|---|---|------------------------------|
| { | Telson small in relation to the peduncle of the uropods | 1. Gen. Chalarostylis |
| { | Telson large in relation to the peduncle of the uropods | 2. Gen. Hemilamprops |

1. Gen. **Chalarostylis** A. M. Norman

1879 *Chalarostylis*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 65 | 1900 *C.*, G. O. Sars, Crust: Norway, v. 3 p. 26 | 1912 *C.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 144.

Telson short, with three apical spines. Uropods remarkably long and slender. Female unknown.

1 species.

1. **C. elegans** Norm. 1879 *C. e.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 66 | 1912 *C. e.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 144.

Pseudorostral lobes forming no sinus. Carapace not deep but wide, spinulose, anteriorly with medio-dorsal crest of about 10 small spines. Anterior margin of pedigerous segments smooth, side-plates of fifth not produced

backwards. Pleon quite smooth; telson only as long as the sixth and little over half the fifth pleon segment, with 2 pairs of lateral and 3 apical spines. Antenna 1, 1st joint spinose, especially below. Antenna 2 as long as cephalothorax, strongly ciliated. Peraeopod 2 (in original description called 1st by error) with slender 2nd joint, not spined, 3^d joint very short with 1 long spine, 4th longer with similar spine, 5th nearly as long as 3 preceding joints combined and much longer than the 2 following together, armed with 10 spines, 2 of them much longer than the rest, 6th joint very short, one-third of 7th. Pleopods with long peduncle, and setose rami. Peduncle of uropods thrice as long as telson, with 24 spines on the medial margin, endopod with 1st joint as long as the telson, 8 spines on medial margin, 2nd with 2, 3^d with no spines; exopod reaching middle of 3^d joint of endopod. L. adult ♂ rather more than 8 mm.

Off Rockall, depth 199 m.

2. Gen. *Hemilamprops* G. O. Sars

1883 *Hemilamprops*, G. O. Sars in: Forh. Selsk. Christian., nr. 18 p. 11, 55 | 1896 *H.*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 546, 549 | 1908 *H.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 169, 171 | 1912 *H.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 144.

Distinguished from *Chalarostylis* by the greater development of the telson.

6 species.

Synopsis of species:

- | | | | |
|---|---|---|-------------------------|
| 1 | { | Telson with more than 5 apical spines — 2. | |
| | { | Telson with not more than 5 apical spines — 3. | |
| 2 | { | Eye large, red, with 8 lenses; telson with 8 apical spines | 1. <i>H. rosea</i> |
| | { | Eye whitish, without lenses, telson with only 6 apical spines | 2. <i>H. assimilis</i> |
| 3 | { | Eye wanting — 4. | |
| | { | Eye present — 5. | |
| 4 | { | Telson with 5 apical spines | 3. <i>H. normani</i> |
| | { | Telson with only 3 apical spines | 4. <i>H. pellucida</i> |
| | | Carapace without pair of carinae curving round the frontal | |
| 5 | { | lobe | 5. <i>H. cristata</i> |
| | { | Carapace with pair of carinae curving round the frontal | |
| | | lobe | 6. <i>H. uniplicata</i> |

1. *H. rosea* (Norm.) 1863 *Vaunthompsonia r.* + *Cyrianassa elegans*, A. M. Norman in: Tr. Tyneside Club, v. 5 iv p. 271 t. 13 f. 1—3 ♀; p. 275 t. 13 f. 4—9 ♂ | 1865 *Lamprops r.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 189 | 1883 *Hemilamprops r.*, G. O. Sars in: Forh. Selsk. Christian., 1882 p. 11, 55 | 1897 *H. r.*, T. Scott in: Rep. Fish. Board Scotl., v. 15 p. 134 | 1899 *H. r.*, G. O. Sars, Crust. Norway, v. 3 p. 22 t. 12—14 | 1900 *H. r.*, T. Scott in: Ann. Scott. nat. Hist., v. 9 p. 219 | 1905 *H. r.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 41.

Integument thin, semipellucid. Carapace, especially in ♀, shorter than the group of pedigerous segments, dorsal line straight, horizontal, sides smooth, pseudorostral projection almost obsolete. Second and third pedigerous segments the largest. Telson rather broad, lamellar, equal in length to peduncle of uropods, not rapidly narrowing to the rounded apex, which carries 4 pairs of spines. the outermost the longest, lateral margins generally with 2 pairs of setiform spines. Eye large, round, red, with 8 lenses. Antenna 1 with principal flagellum 3-jointed, its 1st joint in the ♂ having a fascicle of 6 setae,

accessory 2-jointed. Antenna 2 in ♀ with 1st joint carrying 3 plumose setae, its length subequal to 3 following joints combined. Peraeopod 1 fully twice as long as the carapace, 2nd joint much shorter than the rest combined, among which the 6th joint is much the longest. In peraeopod 2 the 6th joint is shorter than any but the 3^d. In the 3^d and 4th pairs the 2nd joint is much longer than the rest of the limb, slender in the ♀ with small 2-jointed exopod attached near the base, but stout in the ♂ with exopod fully developed, the 3^d pair in the ♂ carrying on the 3^d joint 2 smooth falciform spines. Peraeopod 5 small, normal. Uropods slender, peduncle not longer than the exopod, in which the 1st joint is about two-thirds as long as the second, the two together not quite equal to the first 2 of the endopod, which has about 15 spines on the medial margin of its long 1st joint, 4 on the second, and the still shorter 3^d furnished with 5 little spines round the apex. Colour crimson, in ramified stellate patches. L. ♀ 6 mm, ♂ 7 mm.

Norway, Finmark, Shetland, N. E. England, W. of Scotland and Ireland. Depth 38 to 364 m.

2. *H. assimilis* O. Sars 1883 *H. a.*, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 11, 55 t. 1 f. 23, 24 | 1899 *H. a.*, G. O. Sars, Crust. Norway, v. 3 p. 23 t. 15 | 1905 *H. a.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 41.

Near to *H. rosea*, but eye imperfect, without lenses, pigment whitish; peraeopod 1 rather less slender, 6th joint scarcely as long as, instead of longer than the 3 preceding joints combined; peraeopod 3, with the 2 peculiar spines on 3^d joint in ♂ more slender, not falciform, distally annulate and on one side denticulate; telson more narrowed distally, with single pair of slender lateral spines, only 6 apical, the outermost pair much the longest; body semipellucid, unpigmented. L. ♀ 5 mm, ♂ 6 mm (Sars, 1899); ♀ 6.5 mm (Sars, 1883).

East Finmark, at Vardö, 56—94 m (Sars, 1883), Vardö, Hammerfest and Hasvig, 113—377 m (Sars, 1899).

3. *H. normani* Bonnier 1896 *H. n.*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 546 t. 29 f. 3a—r | 1900 *H. n.*, G. O. Sars, Crust. Norway, v. 3 p. 25 | 1905 ?*H. cristata*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 41 | 1908 *H. normani*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 171 | 1912 *H. n.*, T. Scott in: Sci. Invest. Fish. Scotl., 1911 nr. 1 p. 3.

Pseudorostral lobes little prominent, smooth, apically rounded. Carapace smooth, except for medio-dorsal serrate carina reaching nearly half way along with 26 teeth, of which 6 are on the prominent but sightless eye-lobe; 2 slight submedian furrows on the hinder half of the carapace. The telson is about four-fifths of the length of the peduncle of the uropod, its sides serrate, the hinder half carrying 7 pairs of strong spines in the ♂, 5 in immature ♀, the apex 5 spines of which the central one is much the longest. Antenna 1 with flagellum of 5 short joints, accessory 3-jointed, two-thirds of length of the principal. Antenna 2 of ♀ with a single plumose seta on each of first 2 joints. Maxilliped 2 with 3^d joint fused or lost. Peraeopods 3, 4, with rudimentary 2-jointed exopods. Peduncle of uropods shorter than the rami, of which the endopod is only a little the longer, carrying on the medial margin of its 3 joints 8, 4, and 2 spines respectively; the exopod, as figured, has the first joint somewhat longer than the second. L. ♂ 10 mm, ♀ a little less. None of the specimens fully adult.

Bay of Biscay, depths 650 and 950 m.

4. *H. pellucida* Zimmer 1908 *H. p.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 171, 172 t. 39 f. 53, 54; t. 40 f. 55—59 | 1910 *H. p.*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 6 p. 415 | 1912 *H. pellucidus*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 10 v p. 144 t. 52 (4).

Integument pellucid, delicate, microscopically scabrous. Pseudorostral lobes short, subacute, with serrate edges. Carapace in both sexes rather deep, the small triangular eyelobe without lenses, its medio-dorsal line convex, carrying 4 or 5 forward-pointing denticles, immediately followed by a nearly level line of 20 denticles reaching beyond the middle of the carapace and succeeded by a groove between the inflated branchial regions. Pedigerous segments combined shorter than the carapace. Pleon longer than the preceding portion of the body. Telson with 3 long apical spines, its lateral margins conspicuously denticulate, on the nearly parallel-sided hinder half carrying 6 to 8 pairs of spines, subject to some irregularity; the telson in the adult male apparently longer than in the ♀, with a narrower base. Antenna 1 with serrate edge to the large 1st joint, 3^d joint small, in ♂ not longer than broad, flagellum in ♀ 5- or 6-jointed, accessory of 3 joints, the 3^d microscopic, flagellum in ♂ 4-jointed, accessory of 3 well developed joints. Antenna 2 ♀ small, 4-jointed, with 1 seta on the rather large 1st joint and 1 on the small 2nd. Antenna 2 in subadult ♂ showing a flat process on the side of the basal joint; the annulated flagellum long. Mouth organs not affording distinctive characters. Peraeopod 1, 2nd joint much curved, its convex border distally serrate. Peraeopod 2, 2nd joint shorter than succeeding joints combined, of which the strongly spined 5th is longer than the short 6th and long narrow 7th combined. Peraeopods 3 and 4 showing the characteristic sexual differences, but the 3^d joint in peraeopod 3 of the subadult male not showing any flattened appendages. Pleopods as in *Paralamprops serratocostata* (p. 59). Peduncle of uropods in ♀ longer than the telson with its terminal spines and longer than both rami, but in the subadult ♂ not longer than the telson including its median apical spine and not quite so long as the endopod, which in this sex has the 3^d joint a little longer than the 2nd, and the first much longer than these 2 combined; the exopod, with its first joint considerably longer than the 2nd, is equal to the peduncle in the ♂, but shorter than it in the ♀. L. 8.5 mm.

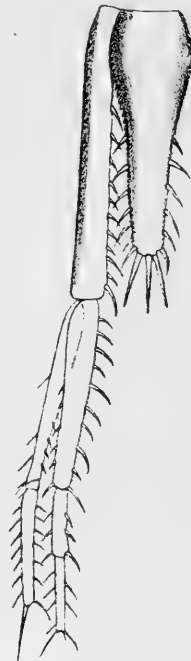


Fig. 27.
H. pellucida (♂) Zimmer,
telson and uropod (after
Stebbing).

S. Africa, outside the Agulhas Bank, depth 564 m, and off Cape Point N. 81° E. 32 miles.

5. *H. cristata* (O. Sars) 1870 *Lamprops c.*, G. O. Sars in: *Forth. Selsk. Christian.*, 1869 p. 157 | 1872 *L. c.*, G. O. Sars in: *Forth. Selsk. Christian.*, 1871 p. 270 | 1879 *L. c.*, A. M. Norman in: *Ann. nat. Hist.*, ser. 5 v. 3 p. 68 | 1883 *Hemilamprops c.*, G. O. Sars in: *Forth. Selsk. Christian.*, nr. 18 p. 11, 56 | 1886 *H. c.*, G. O. Sars in: *Norske Nordhavs-Exp.*, v. 6 *Crust.* 2 p. 19 | 1896 *H. c.*, J. Bonnier in: *Ann. Univ. Lyon*, v. 26 p. 549 | 1900 *H. c.*, G. O. Sars, *Crust. Norway*, v. 3 p. 25 t. 18 | 1905 ?*H. c.*, Calman in: *Sci. Invest. Fish. Ireland*, 1904 app. 1 p. 41 | 1908 *H. c.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 171 | 1912 *H. c.*, T. Scott in: *Sci. Invest. Fish. Scotl.*, 1911 nr. 1 p. 3.

In near agreement with *H. normani* (nr. 3) and *H. pellucida* (nr. 4), but distinguished from both in the ♂ by absence of the medio-dorsal longitudinal

denticulation of the carapace, agreeing in both sexes with *H. pellucida* but differing from *H. normani* in the apical spines of the telson; having in peraeopod 1 the 7th joint twice as long as the 5th, and notably longer than the 6th, while in a ♀ specimen of *H. pellucida*, 8 mm long, this 7th joint is notably shorter than the 6th and less than once and a half as long as the 5th. The fragility of this limb in the southern species commonly makes it unavailable for comparison. Peraeopod 3 in the ♂ appears to agree with *H. pellucida* in the want of peculiar appendages on the 3^d joint. Telson comparatively short, scarcely longer than the last segment, not decidedly longer as in the other two species, with 2 or 3 pairs of lateral spinules, and 3 subequal apical spines, much larger than the spinules (Sars), or with 3 in ♂, 4 or 5 in ♀ pairs of lateral spines, and 3 apical, not greatly longer than the others, the median sometimes a little the longest (Calman, but perhaps referring to *H. normani*). Colour light orange or golden yellow, eye distinct, bright red (G. O. Sars), without pigment (Calman). L. 7 mm.

Norway, N. to Lofoten Islands, in depths 150 to over 188 m; South of Rockall, 1152 m.

6. *H. uniplicata* (O. Sars) 1872 *Lamprops u.*, G. O. Sars in: Forh. Selsk. Christian., 1871 p. 270 | 1883 *Hemilamprops u.*, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 11, 56 | 1886 *H. u.*, G. O. Sars in: Norske Nordhavs-Exp., v. 6 Crust. 2 p. 18 | 1896 *H. u.*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 549 | 1899 *H. u.*, G. O. Sars in: Crust. Norway, v. 3 p. 24 t. 16, 17 | 1905 *H. u.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 41 | 1908 *H. u.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 171.

Body long and slender. Pseudorostral lobes shortly produced, quadrate. Frontal lobe of carapace slightly keeled medio-dorsally, and almost surrounded by a pair of conspicuous curved carinae, which approach without meeting one another behind the middle of the carapace. Eyelobe very small, triangular. Pleon considerably longer than preceding portion of the body, slightly tapering. Telson much longer than the sixth segment, subequal to peduncle of uropods, evenly tapering, with 6 or 7 pairs of lateral spines, and 3 subequal rather longer spines on the apex. Eye very small, but distinct, red. Antenna 1 of ♀ with principal flagellum and accessory both 3-jointed, 3^d joint of accessory minute, flagellum of ♂ 5-jointed, 1st joint with row of 7 long filaments, accessory of 3 joints, with perhaps a microscopic 4th. Sars figures on 2nd joint of antenna 2 in ♂ a laminar process similar to that in *H. pellucida*. Peraeopod 1, 2nd joint strongly curved, 7th joint longer than 6th, more than twice as long as 5th. Peraeopod 3 in ♂ without peculiar appendages on the 3^d joint but with special sculpture of the widened short 6th joint. Peduncle of the uropods subequal to the exopod, in which the 1st joint is rather more than $\frac{2}{3}$ ds of the second, both combined being much shorter than the endopod, in which the 1st joint is far longer than the combined 2nd and 3^d. Colour bright orange. L. 7 mm.

Norway, N. to Lofoten Islands and Norwegian N. Atlantic, 113—785 m, W. coast of Ireland, depth 364 m.

7. Fam. **Paralampropidae**

1912 *Paralampropidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 143.

Telson large, with more than 2 apical spines. Antenna 1 with both flagella well developed. Antenna 2 of female 5-jointed. Maxilla 1 without palp. Peraeopods 1—4 with exopods in both sexes well developed except those on the 3^d and 4th pairs of the female which are rudimentary. Only 3 pairs of pleopods in the male. Uropods with the endopod 3-jointed.

1 genus.

1. Gen. **Paralamprops** O. Sars

1887 *Paralamprops*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 6, 26 | 1908 *P.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 169, 170.

Carapace broad, depressed, without antero-lateral angles. Pleon long and slender. Telson with three apical spines. Eye wanting. Fifth peraeopod normal.

2 species.

Synopsis of species:

- { Telson not nearly reaching end of peduncle of uropod 1. **P. serratocostata**
 { Telson reaching end of peduncle of uropod 2. **P. aspera**

1. **P. serratocostata** (O. Sars) 1885 *Hemilamprops serrato-costata*, G. O. Sars in: Rep. Voy. Challenger, v. 1 pars 2 p. 742 (nom. nud.) | 1887 *Paralamprops s.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 9, 26 t. 2 f. 6—13; t. 3 | 1908 *P. s.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 169.



Fig. 28.

P. serratocostata Sars (♂ juv.).

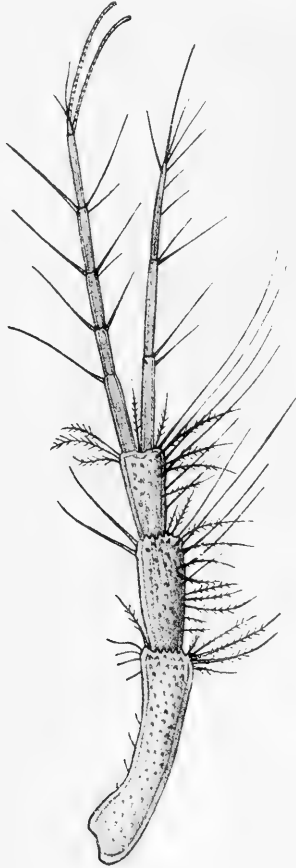


Fig. 29.

P. serratocostata (♀) Sars, antenna 1.

Pseudorostral lobes short, somewhat upturned, denticulate. Carapace nearly parallel-sided, sculptured by 7 longitudinal serrate carinae, one median on anterior half, an arcuate submedian pair on the hinder half, flanked by a longer subdorsal pair, and a lateral pair encircling the whole carapace.

Between the 2 latter pairs is a small interrupted serrate carina, and beneath the encircling keel there is a small smooth one. Pedigerous segments well developed, first three with transverse rows of denticles, and their infero-lateral angles acute. Pleon with telson much longer than preceding part of the body. Telson very slender, much longer than 6th pleon segment, but much shorter than the peduncle of the uropods, armed with 10 pairs of

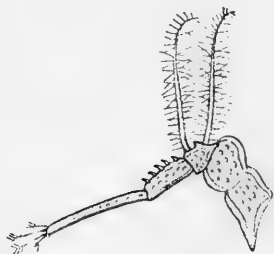


Fig. 30.
P. serratocostata (♀) Sars,
antenna 2.

spines laterally, the large last pair similar to the 3 apical spines. Ocular lobe very small, conical. Antenna 1 elongate, apices of 1st and 2nd joints denticulate, flagellum of 5 long joints and a terminal very short one, each of the last 2 having an annulated sensory appendage; accessory 3-jointed nearly as long as principal. Antenna 2 of ♀ with basal joint perhaps subdivided, the next joint short with 2 plumose setae, the terminal joint long and slender, the penultimate denticulate. Maxilliped 1 with 6 branchial leaflets on the epipod. Peraeopod 1 long and slender, 7th joint very slender, as long as the 5th, each shorter than the 6th, all three with slender setae on the medial margin. Peraeopod 2 with long 5th joint equal to 6th and 7th combined, 6th very short. Peraeopod 5 very small. Pleopods with short rami, the endopod 1-jointed with projection crossing the 2-jointed exopod just below its 1st joint, each ending in 4 setae. Peduncle of uropods long, but scarcely longer than the endopod, both carrying numerous unequal spines on the medial margin, 1st joint of endopod nearly twice as long as the other 2 joints combined; exopod as long as first 2 joints of endopod, its 1st joint very short. L. ♀ 12 mm.

Kerguelen Islands, depth 232 m.

2. *P. aspera* Zimmer 1907 *P. a.*, Zimmer in: Zool. Anz., v. 31 p. 373 | 1912 *P. asper*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 143.

Very like *P. serratocostata*, but with 9 carinae on the carapace, the encircling lateral pair, a 2nd within meeting this forward on the pseudorostral lobes, a third further in on the hinder half of the carapace, a 4th within this, parallel to it but a little further forward, and a median carina on the front half; the third carina continued on the pedigerous segments; of these the antero-lateral angles are not acutely produced; pleon dorsally rough with denticles; telson reaching end of peduncle of uropods; antenna 1 long, but not so long as in the preceding species. Colour yellowish white. L., young ♂, about 9 mm.

German South Pole Expedition, Winter Station (lat. 66° 2' S., long. 89° 38' E.), depth 385 m.

8. Fam. **Platysymphodidae**

1899 & 1900 *Platyaspidae*, G. O. Sars, Crust. Norway, v. 3 p. 3; p. 26 | 1905 *P.* (part.), Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 42 | 1912 *Platysymphodidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 143.

Telson large with more than 2 apical spines. Antenna 1 with both flagella well developed. Antenna 2 of female 4-jointed. Maxilla 1 without palp. Exopods on peraeopods 1—4 in the male, only on the 1st pair in the female. Only 3 pairs of pleopods in the male. Uropods with the endopod 3-jointed.

1 genus.

1. Gen. ***Platysympus*** T. Stebbing

1870 *Platyaspis* (non *Platyaspis* Agassiz 1846 pro: *Platynaspis* Redtenbacher Col. 1843) (Sp. un.: *P. typica*), G. O. Sars in: Forh. Selsk. Christian., 1869 p. 158 | 1900 *P.*, G. O. Sars, Crust. Norway, v. 3 p. 26 | 1905 *P.* (part.), Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 42 | 1908 *P.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 159, 170 | 1912 *P.*, Calman in: P. U. S. Mus., v. 41 p. 634 | 1912 *Platysympus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 143.

Carapace broad, depressed, first pedigerous segment conspicuous, flagellum of antenna 2 in the male not very elongate.

2 species.

Synopsis of species:

- | | | | |
|---|------------------------------|---|-------------------------|
| { | Telson two-thirds as long | { | |
| | as the peduncle of the | | |
| | uropods | | 1. <i>P. typicus</i> |
| | Telson little more than half | | |
| | as long as the peduncle | | |
| | of the uropods | | 2. <i>P. brachyurus</i> |

1. *P. typicus* (O. Sars) 1870 *Platyaspis typica*, G. O. Sars in: Forh. Selsk. Christian., 1869 p. 158 | 1900 *P. t.*, G. O. Sars, Crust. Norway, v. 3 p. 27 t. 19, 20 | 1905 *P. t.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 12, 42 | 1907 *P. t.*, Zimmer in: Zool. Anz., v. 31 p. 374 | 1912 *P. t.*, Calman in: P. U. S. Mus., v. 41 p. 634 | 1912 *Platysympus typicus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 144.

Integument squamose. Carapace twice as long as the pedigerous segments combined, or in ♀ even more than twice, the shape quadrangular oval, widest in front in ♂, to the rear in ♀, pseudorostrum about horizontal, eyelobe small, the medio-dorsal line

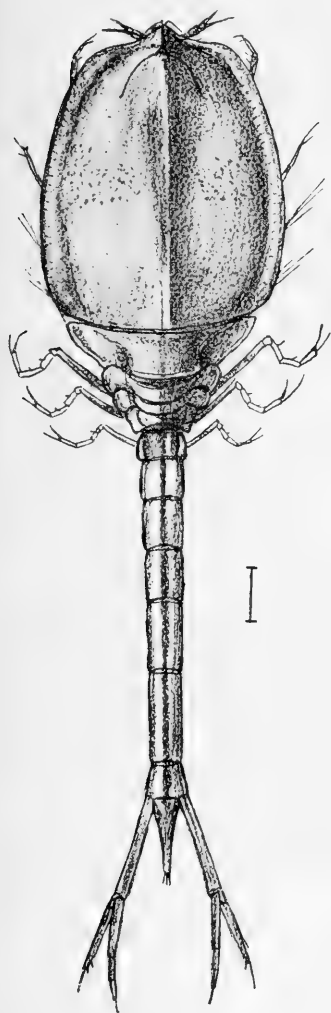


Fig. 31.
P. typicus (♀) (Sars).



Fig. 32.
P. typicus (Sars), maxilla 1.

from this to the rear gently convex, obtusely carinate, the sides lamellarly expanded, carinate, probably fringed as in *Platytyphlops peringueyi*. Pedigerous segment 1 in adults nearly as long as the 3 following segments combined, with saddle-like dorsal depression; 2nd segment with double dorsal carina (Calman). Pleon very slender, subequal in length to preceding part of the body. Telson

two-thirds as long as peduncle of uropods in ♂, rather longer than that proportion in ♀, the side margins very faintly serrate, the apex carrying three subequal spines. Antenna 1 ♀, 1st joint equalling the 2nd and shorter 3^d combined, flagellum 3-jointed, accessory 2-jointed; in ♂, 3^d joint of peduncle broader than long, flagellum 5-jointed, 1st joint with brush of long setae, accessory 3-jointed. Antenna 2 ♀, 1 plumose seta on each of first 3 joints, 4th joint tapering, as long as 2nd and 3^d combined; in ♂ only just reaching the pleon. Peraeopod 1, 2nd joint nearly equal to rest of joints combined, 3^d very small, 4th, 5th, 6th subequal, 7th shorter. Peraeopod 2 narrow, rather long, 2nd, 5th and 6th joints long, the rest short, strong spines on 5th. Peraeopod 5 small, but not rudimentary. Peduncle of uropods rather longer than the endopod which carries 2, 1, 1 spines on the serrate medial margin of its 3 joints respectively; exopod as long as first 2 joints of the endopod. Colour light yellow, with whitish band across carapace. L. ♀ 6 mm, ♂ 5.5 mm.

Norway, to Lofoten Islands, depth 226—753 m; W. of Ireland, depths 364 and 728 m; Mediterranean, near Capri 750—1100 m.

2. *P. brachyurus* (Zimmer) 1907 *Platyspis brachyura*, Zimmer in: Zool. Anz., v. 31 p. 374 | 1912 *Platysympus brachyurus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 144.

General habit as in *P. typicus*, but carapace not as there twice as long as group of pedigerous segments, and its lateral margins obtuse, the pseudo-rostrum rather longer, the first pedigerous segment shorter, the telson little more than half as long as the peduncle of the uropods, with its side margins, like the medial margin of the uropods, coarsely serrate. Uropods with 3, 1, 1 spines on the 3 joints of the endopod respectively; exopod missing. Colour white, very pellucid. L. ♀ about 5 mm, ♂ unknown.

German South-Pole Expedition, Winter Station (lat. 66° 2' S., long. 89° 38' E.), depth 385 m.

9. Fam. **Leuconidae**

1878 & 1879 *Leuconidae*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 466; v. 4 p. 22 | 1883 *L.*, G. O. Sars in: Forh. Selsk. Christian., nr. 18 p. 12 | 1887 *L.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 8, 32 | 1893 *L.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 304, 312 | 1900 *L.*, G. O. Sars, Crust. Norway, v. 3 p. 28 | 1907 *L.*, Calman in: Tr. zool. Soc. London, v. 181 p. 31 | 1908 *L.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 176 | 1909 *L.*, Zimmer in: Ergeb. Schwed. Südp.-Exp., v. 6 nr. 3 p. 5 | 1912 *L.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 155.

All the pedigerous segments distinct. Telson wanting. Eye wanting. First antenna with accessory flagellum small. Mandibles broad at the base, spines few. Palp of first maxilla with a single filament. Branchial leaflets few. Exopods on first four pairs of peraeopods in the male and the first three in the female. Two pairs of pleopods in the male. Uropods with the endopod two-jointed.

4 genera.

- | | | | |
|---|---|--|------------------------------|
| 1 | { | First antenna not geniculate | 1. Gen. Leucon |
| | { | First antenna geniculate — 2. | |
| 2 | { | First antenna geniculate between 2 nd and 3 ^d joints . . | 2. Gen. Eudorella |
| | { | First antenna geniculate between 1 st and 2 nd joints — 3. | |
| | { | Pseudorostrum obsolete or short, vertical, truncate . . | 3. Gen. Eudorellopsis |
| 3 | { | Pseudorostrum obliquely upturned above the carapace | 4. Gen. Pseudoleucon |

1. Gen. **Leucon** Kröyer

1846 *Leucon* (part.), Kröyer in: Naturh. Tidsskr., ser. 2 v. 21 p. 208 | 1855 *L.*, W. Liljeborg in: Öfv. Ak. Förh., 1855 v. 12 p. 121 | 1865 *L.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 176 | 1871 *L.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 38 | 1879 *L.*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 23 | 1887 *L.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 33 | 1896 *Leuconopsis*, A. O. Walker in: Rep. Brit. Ass., 1896 v. 66 p. 417 | 1897 *L.*, A. O. Walker in: J. Linn. Soc. London, v. 26 p. 227 | 1900 *Leucon*, G. O. Sars, Crust. Norway, v. 3 p. 29 | 1907 *L.*, Calman in: Tr. zool. Soc. London, v. 181 p. 31 | 1908 *L.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 176 | 1909 *L.*, Stappers in: Cellule, v. 25 p. 369 (alimentary system) | 1911 *L.*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 99 | 1912 *L.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 156.

Pseudorostral projection prominent, carapace with longitudinal, medio-dorsal, serrate crest in female, often wanting in male. Peduncle of first antenna without conspicuous geniculation, accessory flagellum usually very small. Terminal joint of second antenna in female well defined. Hepato-pancreatic glands with four pairs of lobes.

20 species.

Synopsis of species:

- | | | | |
|----|---|--|-----------------------------|
| 1 | { | Branchial siphon monstrously extensile | 1. <i>L. siphonatus</i> |
| | { | Branchial siphon not monstrously extensile — 2. | |
| 2 | { | Pseudorostrum ♀ more than half length of rest of carapace. | 2. <i>L. tenuirostris</i> |
| | { | Pseudorostrum not more than half length of rest of carapace — 3. | |
| 3 | { | Uropods with rami subequal — 4. | |
| | { | Uropods with rami not subequal — 10. | |
| 4 | { | Dorsal crest of ♀ carapace serrated throughout its length — 5. | |
| | { | Dorsal crest of ♀ carapace with partial or interrupted serration — 6. | |
| 5 | { | Pseudorostrum truncate | 3. <i>L. nasicoideus</i> |
| | { | Pseudorostrum acute | 4. <i>L. australis</i> |
| 6 | { | Uropods with 2nd joint of endopod more than half as long as the 1st | 5. <i>L. fulvus</i> |
| | { | Uropods with 2nd joint of endopod not more than half as long as the 1st — 7. | |
| 7 | { | Medio-dorsal serrations reaching end of carapace after an interval — 8. | |
| | { | Medio-dorsal serrations not reaching end of carapace — 9. | |
| 8 | { | Antenna 1, accessory flagellum much shorter than 1st joint of principal. | 6. <i>L. nasica</i> |
| | { | Antenna 1, accessory flagellum as long as 1st joint of principal | 7. <i>L. antarcticus</i> |
| 9 | { | Uropods with 2nd joint of endopod half as long as 1st | 8. <i>L. nathorsti</i> |
| | { | Uropods with 2nd joint of endopod much less than half as long as 1st. | 9. <i>L. septemdentatus</i> |
| 10 | { | Uropods with exopod shorter than endopod — 11. | |
| | { | Uropods with exopod longer than endopod — 14. | |
| 11 | { | Antenna 1 with accessory flagellum shorter than 1st joint of principal. | 10. <i>L. mediterraneus</i> |
| | { | Antenna 1 with accessory flagellum not shorter than 1st joint of principal — 12. | |

- | | | | |
|----|---|---|----------------------------|
| 12 | { | Antenna 1 with accessory flagellum longer than 1st joint of principal | 11. <i>L. heterostylis</i> |
| | | Antenna 1 with accessory flagellum not longer than 1st joint of principal — 13. | |
| 13 | { | Telsonic segment greatly produced between the uropods | 12. <i>L. longirostris</i> |
| | | Telsonic segment only moderately produced between the uropods | 13. <i>L. kalluropus</i> |
| 14 | { | Uropod with 2nd joint of endopod not broader at end than its apical spine | 14. <i>L. pallidus</i> |
| | | Uropods with 2nd joint of endopod broader at end than its apical spine — 15. | |
| 15 | { | Carapace with median serrations continuous throughout | 15. <i>L. serratus</i> |
| | | Carapace with median serrations not continuous throughout — 16. | |
| 16 | { | Eyelobe small but distinct | 16. <i>L. kerguelensis</i> |
| | | Eyelobe rudimentary — 17. | |
| 17 | { | Pseudorostrum horizontal — 18. | |
| | | Pseudorostrum bent upwards — 19. | |
| 18 | { | Frontal lobe with 3 denticles on each side; median serrations not limited to first half of carapace . | 17. <i>L. assimilis</i> |
| | | Frontal lobe without lateral denticles; median serrations only on first half of carapace. | 18. <i>L. acutirostris</i> |
| 19 | { | Uropods with exopod only a little longer than the peduncle | 19. <i>L. sagitta</i> |
| | | Uropods with exopod much longer than the peduncle | 20. <i>L. vanhoeffeni</i> |

1. *L. siphonatus* Calm. 1905 *L. s.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 19 t. 1 f. 2—4 | 1906 *L. s.*, Calman in: Mt. Stat. Neapel, v. 17 p. 416 t. 27 f. 9 | 1908 *L. s.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 177.

Pseudorostral lobes well advanced, slightly upturned, apically rounded, with teeth on the dorsal and apical margins in the ♀ only, the border between

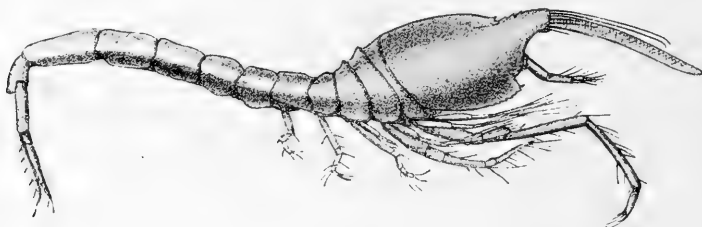


Fig. 33.
L. siphonatus Calman (♀ juv.).

the apex and the antero-lateral tooth having 2 emarginations separated by a serrate prominence and introduced by a strong subapical tooth; the lower border behind the antero-lateral tooth serrate. In the ♀ the frontal lobe has one or two teeth at its apex. Anteriorly the sides of the carapace are sprinkled with denticles. Antenna 1, 3^d joint longer than 2nd, flagellum 3-jointed, the 1-jointed accessory not wart-like but nearly equal in length to 1st joint of principal flagellum. 1st maxillipeds, with the branchial siphon formed by the exopods capable of protrusion to a distance greater than length of carapace,

surrounded by stiff setae springing from the pseudorostral margin. Peraeopod 1 rather robust, 5th and 6th joints equal, 7th about one-third as long as either. Peduncle of uropods shorter than the subequal rami, endopod with 1st joint nearly three times as long as 2nd, with 5 spines on medial margin, 2nd joint with 3 spines and at apex a spine and a stout plumose seta. L. ♀ juv. (Ireland) 3.85 mm, ♀ with marsupium (Mediterranean) 2.7 mm.

W. coast of Ireland; depth 699 m; Mediterranean, near Capri; depth 100—1100 m.

2. **L. tenuirostris** O. Sars 1887 *L. t.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 33, 38 t. 5 f. 1—4 | 1905 *L. t.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 20 | 1908 *L. t.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 177, 178.

General form very slender. Pseudorostral lobes slightly upturned, tapering to subacute apices for a length exceeding half that of the rest of the carapace; antero-lateral corners little produced but acute, preceded by a small sinus between denticles. Carapace compressed, with median carina having 7 teeth along the front half, and front half of lower margin dentate. Fifth pedigerous segment not wider than the pleon, in which the 5th segment is very long, the telsonic segment short, almost pentagonal, forming an obtuse triangle between the bases of the uropods. Antenna 1, accessory flagellum not wart-like, its one joint as long as first of principal flagellum. Peduncle of uropod as long as the endopod, in which the somewhat tapering first joint has 5 spines on the medial margin, the slender 2nd joint a little more than half as long has 4 spines, the apical the largest; the exopod only reaches half way along the 2nd joint of the endopod. L. ♀ juv. about 10 mm.

N. Pacific, lat. 36° 10' N., long. 178° E.; depth 3750 m.

3. **L. nasicoides** Lilj. 1855 *L. n.*, W. Liljeborg in: Öfv. Ak. Förh., v. 12 p. 122 | 1869 *L. n.*, G. O. Sars in: Nyt Mag. Naturv., v. 16 p. 345 | 1872 *L. n.*, G. O. Sars in: Forh. Selsk. Christian., 1871 p. 270 | 1879 *L. n.*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 15, 22 | 1879 *L. n.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 72 | 1879 *L. nasicoidis*, S. I. Smith in: Tr. Connect. Ac., v. 5 p. 115, *L. nasicoides*, p. 125, 129 | 1886 *L. nasicoides*, G. O. Sars in: Norske Nordhavs-Exp., v. 6 nr. 15 p. 19 | 1887 *L. n.*, H. J. Hansen in: Vid. Meddel., v. 39 p. 199 | 1900 *L. n.*, G. O. Sars, Crust. Norway, v. 3 p. 31 t. 23 | 1900 *L. n.* (part.), Zimmer in: Fauna arctica, v. 1 p. 411, 416 | 1901 *L. n.*, Ohlin in: Bih. Svenska Ak., v. 26 nr. 12 p. 41 | 1908 *L. n.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 177, 178 | 1911 *L. n.*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 102 t. 4 f. 5, 7 | 1912 *L. n.*, Calman in: P. U. S. Mus., v. 41 p. 619.

♀. Pseudorostral lobes moderately produced horizontally to narrowly truncate apex; lateral truncation denticulate; antero-lateral corners triangular, the lower margin behind them serrate for half its length. Median carina of carapace serrate from front to hind margin, frontal lobe having also 3 denticles on each side. Telsonic segment short, pentagonal, triangularly produced between bases of uropods. Antenna 1, 3^d joint shorter than 2nd. Peraeopod 1, 6th joint much shorter than 5th. Peraeopod 2, 3^d joint wanting. Peduncle of uropods a little shorter than the subequal rami; first joint of endopod more than twice as long as 2nd, carrying 9 spines on the medial margin, where the 2nd has 5 followed by a long one at the apex. Colour yellowish white. L. 6 mm.

♂. More slender than ♀. Pseudorostral lobes transversely truncate, with 2 denticles; antero-lateral corners obtuse-angled. Carapace smooth

except for 2 denticles in line at apex of frontal lobe. Peraeopod 3 with 2 subequal narrow lanceolate appendages on the 3^d joint. Peduncle of uropods scarcely shorter than the rami, in which the endopod has a few more spines than in the ♀ and its 2nd joint rather more than half as long as the first. L. 6 mm.

Coast of Norway, depth 19—94 m; Kattegat; Bay of Fundy; Gulf of St. Lawrence; Greenland, depth 75 m; Spitzbergen, depth 1000 m; lat. 45° 29' N., long. 55° 24' W., depth 103 m; Nova Zembla, 90 m.

4. **L. australis** Calm. 1907 *L. a.*, Calman in: Nat. antarct. Exp., v. 2 Crust. Cum. p. 1 f. 1—3.

Pseudorostral lobes very slightly upturned, acute, not denticulate; antero-lateral corners triangular, lower margin behind them serrate for a short distance. Median carina of carapace closely serrate from front to hind margin. Telsonic segment short, pentagonal, obtusely triangular between bases of uropods. Antenna 1, accessory flagellum longer than first joint of principal. Peduncle of uropods slightly shorter than the subequal rami, endopod with 1st joint twice as long as 2nd, carrying 8 spines on medial margin, 2nd joint having 3 on medial margin and a larger one on apex. L. ♀ 3.5 mm.

Antarctic.

5. **L. fulvus** O. Sars 1865 *L. f.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 180 | 1886 *L. f.*, G. O. Sars in: Norske Nordhavs-Exp., v. 6 nr. 15 p. 19 | 1900 *L. f.*, G. O. Sars in: Crust. Norway, v. 3 p. 32 t. 24 | 1900 *L. f.*, Zimmer in: Fauna arctica, v. 1 p. 416 | 1908 *L. f.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 177, 178 | 1911 *L. f.*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 105 t. 4 f. 8.

♀. Pseudorostral lobes slightly upturned to apex in dorsal view narrowly truncate, laterally denticulately truncate; antero-lateral corners acutely produced with slight serration adjoining. Median carina of carapace denticulate from front to behind the middle and after an interval reappearing to the rear. Peraeopod 1, 6th joint nearly as long as 5th. Peduncle of uropods subequal to the subequal rami, 2nd joint of endopod two-thirds as long as 1st, 1st with 6 spines on medial margin, 2nd with 4 and a very long apical spine. Colour bright orange. L. scarcely 5 mm.

♂. Pseudorostral lobes obtusely rounded at apex with its lateral border smooth; antero-lateral corners smoothly rounded, preceded and followed by serration. Carapace quite smooth, with minute denticle at apex of frontal lobe. Peraeopod 3, 3^d joint with 2 comparatively short, falciformly curved appendages (Sars), 4 lanceolate appendages, not very long, slightly incurved, 3 of them subequal (Stappers). Uropods more elongate than in ♀, spines 10 and 6 on joints of endopod, 2nd joint nearly four-fifths as long as 1st. Colour paler than in ♀. L. 5.5 mm.

Lofoten Islands; depth 11—23 m; Finmark; Iceland; Spitzbergen; Nova Zembla, 90 m.

6. **L. nasica** (Kröyer) 1841 *Cuma n.*, Kröyer in: Naturh. Tidsskr., v. 3 p. 524, 532 t. 6 f. 31—33 | 1846 *Leucon n.*, Kröyer in: Naturh. Tidsskr., ser. 2 v. 211 p. 189, 209 t. 2 f. 5a, b | 1849 *L. n.*, Kröyer (Petersen del.) in: Voy. Nord, Crust. t. 3 f. 2a—o | 1855 *L. n.*, W. Liljeborg in: Öfv. Ak. Förh., v. 12 p. 121 | 1865 *L. nasicus*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 178 | 1875 *L. nasica*, Aug. Metzger in: Jahresber. Comm. D. Meere, v. 2/3 p. 286, 308 | 1877 *L. n.*, Meinert in: Naturh. Tidsskr., ser. 3 v. 11

p. 180 | 1879 *L. nasicus*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 70 | 1879 *L. n.*, S. I. Smith in: Tr. Connect. Ac., v. 5 p. 114 | 1884 *L. n.*, J. S. Schneider in: Tromsø Mus. Aarsh., v. 7 p. 54 | 1887 *L. n.*, H. J. Hansen in: Dijnphna Udb., p. 240; and in: Vid. Meddel., v. 39 p. 199 | 1893 *L. nasica*, T. Stebbing in: Int. sci. Ser., v. 74 p. 304 | 1893 *Cuma n.*, Apstein in: Jahresber. Comm. D. Meere, v. 6 p. 196 | 1897 *Leuconopsis ensifer*, A. O. Walker in: J. Linn. Soc. London, v. 26 p. 227 t. 17 f. 1—1h (♂) | 1900 *Leucon nasicus*, G. O. Sars, Crust. Norway, v. 3 p. 30 t. 21, 22; p. 106 *L. nasica* (misprint for *nasica*) | 1900 *L. nasicus*, Zimmer in: Fauna arctica, v. 1 p. 417 | 1901 *L. n.*, Ohlin in: Bih. Svenska Ak., v. 26 nr. 12 p. 40 | 1902 *L. n.*, *L. nasicoideus* (err. pro: *L. nasica* var.), G. S. Brady in: Nat. Hist. Tr. Northumb., v. 14 p. 94 | 1908 *L. nasica*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 177 | 1909 *L. nasicus*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 311 p. 27 | 1911 *L. nasica*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 100, *L. nasicus* t. 4 f. 1, 6 | 1912 *L. n.*, Calman in: P. U. S. Mus., v. 41 p. 619.



Fig. 34.
L. nasica (♂) (Kröyer), pereopod 3
(after Sars).



Fig. 35.
L. nasica (Kröyer), maxilla 1 (after
Sars).

Body slender and elongate. Pseudorostral lobes in ♀ upturned, prominent, obliquely truncate with the truncate edges minutely denticulate and setiferous; antero-lateral corners sharply triangular preceded by a deep sinus, followed for some distance by fine serration of the lower margin. In the ♂ the lobes are shorter, little upturned, almost transversely truncate, and the antero-lateral corners are obtuse with the sinus obsolete. Carapace in ♀ with median carina serrate beyond the middle and after an interval again serrate to the hind margin, but this crest is quite wanting in the adult ♂. Antenna 1, 3^d joint as long as 2nd, accessory flagellum minute, though 2-jointed in the ♂. Antenna 2 of ♀ with 3 plumose setae on 1st joint. Pereopod 1 rather long, 6th joint not much shorter than 5th. Pereopod 3 in ♂ with 2 very conspicuous unequal ensiform appendages on the 3^d joint. Peduncle of uropods equal to the equal rami, 2nd joint of endopod less than half as long as the 1st, which has on the medial margin numerous spines long and short interspersed, the 2nd joint having a graduated series of spinules followed by a long apical spine and still longer plumose seta; the exopod carries numerous

plumose setae. Colour whitish. L. ♀ 12 mm, ♂ 10 mm. The young ♂ is much like the ♀.

Norway, depth 56—188 m; Kattegatt; Heligoland; British Isles, depth 82—108 m; Gulf of St. Lawrence, depths 91 and 128 m; Spitzbergen, 175—210 m; Kara Sea; Greenland, 4—565 m; Afognak Bay, Alaska, 22—31 m; Coal Harbor, Unga, 11—14 m; Mare Murmanicum, 90 m.

7. **L. antarcticus** Zimmer 1907 *L. antarctica*, Zimmer in: Zool. Anz., v.31 p.227.

♀ juv. Slender. Pseudorostral lobes much extended to apex in dorsal view very acute; antero-lateral corners preceded by a broad deep sinus. Carapace with denticulate carina from front to hind margin, but last 2 denticles separated by a smooth space from the rest. An eyelobe obscurely present, the frontal lobe having a pair of lateral denticles in front and a sublateral pair to the rear, the pseudorostral lobes also having a pair close to the front pair of the frontal lobe. Antenna 1, the 1-jointed accessory flagellum as long as 1st joint of principal flagellum. Peduncle of uropods shorter than the rami, exopod slightly shorter than endopod, which has on medial margin of 1st joint about 9 spines, 3 on 2nd joint and an apical spine. Colour yellowish white. L. about 13.3 mm. ♂ juv. differing little from ♀ juv.

German South-Pole Expedition, Winter Station (lat. 66° 2' S., long. 89° 38' E.)



Fig. 36.

L. nasica (Kröyer), maxilliped 1 (after Sars).

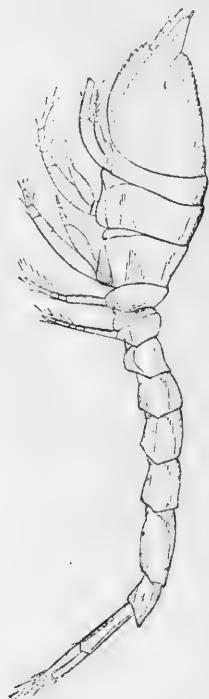


Fig. 37.

L. nathorsti Ohlin.

8. **L. nathorsti** Ohlin 1900 *L. nasicoideus* (part.), Zimmer in: Fauna arctica, v.1 p.417 | 1901 *L. nathorsti*, Ohlin in: Bih. Svenska Ak., v.26 nr.12 p.41 t.6 f.9a—c | 1908 *L. n.*, Zimmer in: Ergeb. Tiefsee-Exp., v.8 p.178 | 1911 *L. n.*, Stappers in: Camp. arct. Orléans, Crust Malac. p.104.

Near to *L. nasicoideus* (nr. 3), but pseudorostral lobes longer and more acuminate, with six teeth to the lateral truncation; the antero-lateral corners moderately produced, lower margin behind them serrate for a third of its length. Median carina of carapace with 13—15 teeth reaching a little

behind the middle, and usually 2 or 3 more within the remaining space; frontal lobe usually with only 1 denticle or none (instead of 3) on each side. Peduncle of uropods about equal to endopod, a little longer than exopod; 2nd joint of endopod half as long as 1st. Adult ♂ without median carina. L. ♀ 7 mm.

King Charles Island, lat. 78° 50' N., depths 20—110 m. *Leucon breviremis*, H. J. Hansen MS., not adopted by Ohlin, as being appropriate only to young specimens.

9. *L. septemdentatus* Zimmer 1902 *L. s.*, Zimmer in: *Ergeb. Hamburg. Magalh.-Sammelr.*, v. 2 Cumac. p. 3 f. 1—5 | 1908 *L. s.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 177, 178 | 1909 *L. s.*, Zimmer in: *Ergeb. Schwed. Südp.-Exp.*, v. 6 nr. 3 p. 5 t. 1 f. 6—16.

♀. Pseudorostral lobes slightly upturned; antero-lateral corners shortly produced, acute. Carapace rather short, median carina variable in length but not reaching beyond the middle, its teeth 5—9 in variable groups. Pleon segment 5 not much longer than 4th, telsonic segment short, little produced between uropods. Antenna 1, single joint of accessory flagellum equal to 1st of primary. Peraeopod 1, 5th joint longer than 6th, 6th than 7th. Peraeopod 2 with full number of joints. Peraeopod 4 with 1-jointed exopod on right or left limb's 2nd joint, whether sometimes on both uncertain. Peduncle of uropods longer than exopod, as long as endopod, of which the 1st joint is more than thrice as long as the 2nd and carries 12 spines on the medial margin, the 2nd having 4, with 2 apical, the latter very long. Colour yellowish white. L. about 5 mm.

♂. More slender than ♀. Pseudorostral lobes shorter and more blunt; antero-lateral corners obtuse, not produced. Carapace without denticulate carina. Flagellum of antenna 2 reaching beyond the pleon. Peraeopod 3 without the peculiar appendages on the 3^d joint sometimes found in ♂ of this genus. Peduncle of uropods rather shorter than the subequal rami, its medial margin and proximally that of endopod having plumose setae intermixed with the spines. L. about 4 mm.

Fuegian archipelago, depth 6 m; Falkland Isles, depths 1—8 m.

10. *L. mediterraneus* O. Sars 1879 *L. m.*, G. O. Sars in: *Arch. Naturv. Kristian.*, v. 4 p. 25 t. 27—29 | 1908 *L. m.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 177.

Integument thin and flexible, squamose. Pseudorostral lobes strongly upturned, triangular in ♀, shorter, sub-horizontal in ♂; antero-lateral corner in ♀ forming a strong tooth preceded by a smaller one, a sinus, and 2 denticles, and followed by about 10 denticles on lower margin's first half; in the ♂ the corners are rounded with 2 denticles at some distance from the feebler serration of the lower margin. Median carina of carapace wanting in ♂, in ♀ low, furnished with 6—8 spaced teeth, the series ending just behind the middle. Pedigerous segments 2—4 with somewhat outstanding side-plates. Pleon segment 5 dorsally setose behind. Telsonic segment short, bluntly conical between bases of uropods. Antenna 1, 3^d joint longer than 1st or 2nd, flagellum 3-jointed in ♀, 4-jointed in ♂, accessory almost imperceptible. Antenna 2, ♀ 3-jointed, with 2 plumose setae on 1st joint, 3^d joint long and narrow; in ♂ flagellum reaching nearly length of the animal, the joints successively longer. Maxilliped 1 with 5 small branchial sacs. Peraeopod 1, 2nd joint unusually narrow and nearly straight. Peraeopod 2, with 3^d joint lost or fused. Peduncle of uropods in ♀ subequal to endopod, which has 9 spines on medial margin of 1st joint and 5 on that of the

second, the latter two-fifths as long as the former and carrying an apical spine; the exopod is a little longer than the 1st joint of the endopod. In the ♂ the endopod is rather longer than the peduncle, its 1st joint equal to the exopod and carrying more numerous spines. Colour whitish, semi-pellucid. L. ♀ 6 mm, ♂ a little less.

Mediterranean, Spezia, depth 38—56 m.

11. *L. heterostylis* Calm. 1907 *L. (?) h.*, Calman in: Tr. zool. Soc. London, v. 181 p. 32 t. 8 f. 1—5.

Pseudorostral lobes straight, horizontal, acute, with coarsely quadridentate projection preceding the sinus which leads to the antero-lateral tooth; serration of lower margin behind the tooth begins strongly but soon dies out. Median line of carapace coarsely and irregularly dentate in anterior half, with one little tooth near hind margin following a depression. Antenna 1, 1st joint longer than 2nd, 2nd than 3^d, principal flagellum of 3 joints, the last minute, accessory 1-jointed, nearly as long as first 2 joints of principal combined. Antenna 2 with 3 joints, 3 plumose setae on the 1st. Maxilliped 1 with 2 papilliform branchial sacs. Peraeopod 2, 3^d joint represented by 2 portions of a narrow ring. Peduncle of uropods a little longer than exopod but a little shorter than 1st joint of endopod, which is two and a half times as long as the 2nd joint, these joints carrying 8 and 4 spines respectively, the apical spine very long. L. ♀ 3.42 mm, ♂ unknown.

New Zealand, Akaroa Harbour, depth 11 m.

12. *L. longirostris* O. Sars 1871 *L. l.*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 1 p. 78 | 1871 *L. l.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 42 t. 15 f. 75 | 1879 *L. l.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 69 | 1906 *L. l.*, Calman in: Mt. Stat. Neapel, v. 17 p. 414 t. 27 f. 1—8 | 1908 *L. l.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 177 | 1912 *L. l.*, Calman in: P. U. S. Mus., v. 41 p. 619.

♀. Pseudorostral lobes more than one-third of total length of carapace, straight, somewhat upturned, acute, with 2 or 3 teeth below leading to a frontal row of 3 or 4, which are separated by a narrow sinus from the strong tooth of the antero-lateral corner; adjoining lower margin serrate for some distance. Median carina of carapace carrying about 7 forward-pointing teeth, diminishing in size towards the hind margin, which they do not nearly reach. Side-plate of 4th pedigerous segment with a little curved tooth at the hind angle, the 5th segment having a pair of forward-curving ventral teeth. Pleon segment 5 long, telsonic segment short, with dorsal depression. Antenna 1, flagellum 3-jointed, its 1st joint as long as 3^d joint of peduncle and as the 1-jointed accessory. Peraeopod 1 long, with row of teeth of 2nd joint on lower surface. Peduncle of uropods a little shorter than the exopod, which is a little longer than the 1st joint of the endopod; the latter more than thrice as long as the 2nd joint, with 15 spines on the medial margin, 2nd joint with 5 on that margin and a much larger apical one. L. ♀ subadult 5.7 mm.

♂. Pseudorostral lobes one-fifth of total length of carapace, level, obliquely truncate with 2 teeth at end of truncation, the margin then retreating to a vertical piece with 2 teeth and a small antero-lateral tooth below. Median carina of carapace in adult without teeth, with 5 in young ♂ (Sars). Side-plate of 4th pedigerous segment without tooth, 5th segment with the ventral pair. Telsonic segment more narrowly produced than in the ♀. Antenna 1, flagellum 4-jointed, its 1st joint in the adult equalled by the

1-jointed accessory, which in the young male is rudimentary, wart-like (Sars), but not so (Calman). Peraeopod 3 without peculiar appendages to the 3^d joint, such as are found in some species. Peduncle of uropods rather shorter than exopod which is a little shorter than 1st joint of endopod, this being 4 times as long as the 2nd joint, both joints having more spines than in the ♀, most of them small and simple, at least as figured. L. 6 mm.

Off Portugal, lat. 38° 7' N., depth 1036 m; Davis Strait, lat. 59° 10' N., depth 3200 m; off Capri, depths 950—1200 m; lat. 40° 16' 50" N., long 67° 05' 15" W., depth 2322 m.

13. *L. kalluropus* Stebb. 1912 *L. k.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 156 t. 57 (9).

Seemingly near to *L. longirostris* (nr. 12), but with the telsonic segment less produced, the produced portion much instead of little shorter than the base, the proportions and armature of the uropods also differing. Pedigerous segment 5 with procurved ventral spines as in the other species, and the 1-jointed accessory flagellum of antenna 1 as long as 1st joint of the 4 in the principal. Peraeopods 1—4 with 2nd joint distally narrowed. In peraeopods 2—5 the 3^d joint is obscure. In the 2nd pair the much spined 7th joint is as long as the 5th and fully twice the 6th. Peduncle of the uropods a little longer than the 1st joint of the endopod, which is more than thrice as long as the 2nd joint, its medial margin fringed with more than 20 serrate spines following 2 or 3 that are setiform, the lateral margin carrying 8 feathered spines; the 2nd joint has 8 serrate spinules on the medial margin; the exopod is a little shorter than 1st joint of endopod, and has various elongate spines. L. ♂ about 5 mm, ♀ unknown.

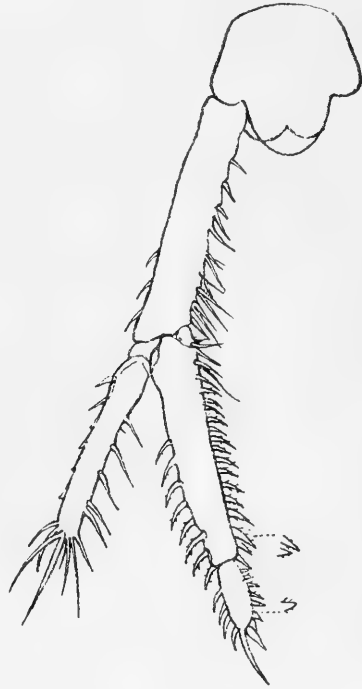


Fig. 38.

S. Africa, Cape Natal N. by E. 24 miles, depth 805 m. *L. kalluropus* (♂) Stebbing, telsonic segment and uropod.

14. *L. pallidus* O. Sars 1865 *L. p.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 182 | 1873 *L. p.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 6 p. 8 t. 3 f. 10 | 1879 *L. p.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 72 | 1886 *L. p.*, G. O. Sars in: Norske Nordhavs-Exp., v. 6 nr. 15 p. 19 | 1894 *L. p.*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 275 | 1900 *L. p.*, G. O. Sars, Crust. Norway, v. 3 p. 33 t. 25 | 1900 *L. p.*, Zimmer in: Fauna arctica, v. 1 p. 417, 432, 437 | 1905 *L. p.* (?), Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 19 | 1908 *L. p.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 178 | 1911 *L. p.*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 106 t. 4 f. 9.

Slender, much compressed. Pseudorostral lobes in ♀ long, horizontal, tapering to obtusely acuminate apex, antero-lateral corners acute, preceded by a deep sinus, followed by serration of lower margin for some distance; in ♂ lobes much shorter, with lower margin serrate and antero-lateral corners rounded off. Carapace with dorsal carina denticulate in both sexes, with

scarcely an interruption from end to end, and in immature specimens (Calman) having 1 or 2 small denticles on each side of the frontal lobe. Telsonic segment very short, produced and rounded triangular. Antenna 1, accessory flagellum rudimentary. Peraeopod 2 with 3^d joint wanting or fused. Peraeopod 3 with three large lanceolate distally denticulate appendages on the 3^d joint in ♂. Peduncle of uropods shorter than the rami or about equal to the endopod exclusive of its spine-like terminal, which in immature specimens is distinct from the trunk (Calman), 2nd joint apart from terminal less than half as long as 1st; exopod longer than endopod with the terminal included. Colour pure white. L. ♀ 4 mm, ♂ 4.5 mm.

Coast of Norway, depth 75—753 m; Spitzbergen, depth 2636 m; Kara Sea; Nova Zembla, 90 m.

15. *L. serratus* Norm. 1876 *L. s.* (nom. nud.), A. M. Norman in: Jeffreys in: P. R. Soc. London, v. 25 p. 212 | 1879 *L. s.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 70 | 1900 *L. s.*, Zimmer in: Fauna arctica, v. 1 p. 418, 432 | 1908 *L. s.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 178.

Pseudorostral lobes short, horizontal, triangular, with serrate edge; antero-lateral corners produced forward and outward in wing-like form, the serrations of lower margin forming about 10 teeth, the first 3 or 4 large. Median carina of carapace boldly arched, serrate from end to end, teeth decreasing to the rear. Peraeopod 1, 2nd joint with 7 spines on hind margin. Peduncle of uropods not longer than 5th pleon segment, endopod much shorter than exopod, each of its joints with 5 spines on the medial margin, apical spine two-thirds as long as the 2nd joint. L. ♀ 6 mm, ♂ unknown.

Davis Strait, lat. 50° 10' N., long. 50° 25' W., depth 3200 m.

16. *L. kerguelensis* Zimmer 1908 *L. k.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 178 t. 41 (6) f. 71, 72, t. 42 (7) f. 73—75.

Body slender. Pseudorostral lobes short, subacute, slightly upturned. Antero-lateral corners rounded, smooth. Carapace with a small but actual eyelobe on which a smooth median carina takes its origin, ceasing a little way to the rear of the frontal lobe. Antenna 1, flagellum 4-jointed, the 1-jointed accessory about half as long as 1st joint of principal flagellum. Antenna 2 about reaching end of the body. Peraeopod 1 elongate, 2nd joint in this and the 3 following pairs strongly developed. Peraeopod 3 having the 3^d joint equipped with 2 lanceolate appendages. Peduncle of uropods closely fringed on medial margin with spines and plumose setae; the endopod about equal to it in length, with 2nd joint half as long as the first, is little more than three-fourths as long as the exopod. Colour white. L. ♂ a little over 5 mm. ♀ unknown.

Kerguelen, Gazelle Harbour.

17. *L. assimilis* O. Sars 1887 *L. a.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 33, 34 t. 4 | 1908 *L. a.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 177, 178.

Near to *L. nasica* (nr. 6). Integument thin, pellucid, with no distinct sculpture. Pseudorostral lobes not elongate; horizontal, subacute, oblique margins denticulate and setulose, sinus denticulate; antero-lateral corners triangular, lower margin denticulate for most of anterior half. Median carina of carapace arcuate in front, densely denticulate and setulose, the 3 sub-terminal denticles a little separated from the rest; eyelobe wanting, frontal

lobe carrying a series of 3 denticles close to each lateral fissure. Pedigerous segments 1—5 with laminar sideplates slightly projecting laterally. Telsonic segment pentagonal, produced end apically rounded. Antenna 1, 2nd joint a little shorter than 1st, and 3^d than 2nd, flagellum 3-jointed, 1st joint twice as long as 2nd and 3^d combined, accessory wart-like. Maxilliped 1, with 5 branchial sacs, the membranous exopod elongate. Peraeopod 1, 5th and 6th joints subequal, 7th much shorter than either, apically carrying some half dozen strong, claw-like spines. Peraeopod 2 with 3^d joint wanting or fused. Peraeopod 3 in young ♂ apparently without any peculiar appendages on 3^d joint, but seemingly in both sexes the 5th joint carries 3 strong setae, the distal part of which is densely annulated and apically uncinat. Peraeopod 5 alike in both sexes, and very small. Peduncle of uropods as long as the endopod, in which the 1st joint is a little more than twice the second, fringed on medial margin with a dozen spines, 3 conspicuously larger than the rest; the 2nd joint has 5 medial marginal and 2 larger apical spines; the exopod is about a fifth of its length longer than the endopod. Colour light yellowish. L. ♀ and young ♂, 9 mm.

Kerguelen, Cumberland Bay, depth 232 m.

18. *L. acutirostris* O. Sars 1865 *L. a.*, G. O. Sars in: Förh. Selsk. Christian., 1864 p. 181 | 1894 *L. a.*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 275 | 1900 *L. a.*, G. O. Sars, Crust. Norway, v. 3 p. 34 t. 26 | 1900 *L. a.*, Zimmer in: Fauna arctica, v. 1 p. 432, 438, 439, 444 | 1908 *L. a.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 178 | 1911 *L. a.*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 107 t. 4 f. 10.

Body of ♀ rather short and thick, of ♂ more slender. Pseudorostral lobes rather short, especially in ♂, horizontal, acuminate, margins adjacent to apex denticulate, setiferous; antero-lateral corners acutely produced in ♀ with serration following a narrow sinus, blunt and smooth in ♂; lower margin serrate for some distance in both sexes. Median carina on anterior half of carapace in ♀, strongly denticulate, but entirely wanting in ♂. Telsonic segment pentagonal, produced part apically rounded. Peraeopod 1, 5th and 6th joints equal, 7th much shorter, apically setose. Peraeopod 2 without 3^d joint. Peraeopod 3 of ♂ having 3 lanceolate not distally denticulate appendages on the 3^d joint. Peduncle of uropods equal to endopod, in which the 2nd joint is two-thirds of the 1st in ♀, a little over half in the ♂, having 4 spines on medial margin of each joint in ♀, but in ♂ 12 on 1st and 6 on 2nd, with a long apical spine in both sexes; exopod somewhat longer than endopod. Colour whitish with olive tinge. L. ♀ 3 mm, ♂ 3.5 mm.

Coast of Norway, depths 56—548 m; Nova Zembla, 90 m.

19. *L. sagitta* Zimmer 1907 *L. s.*, Zimmer in: Zool. Anz., v. 31 p. 225 | 1909 *L. s.*, Zimmer in: Ergeb. Schwed. Südpol.-Exp., v. 6 nr. 3 p. 7 t. 2 f. 17—31.

Body slenderly lanceolate. Pseudorostral lobes moderately long, slightly upturned, apically acute, the oblique margins feebly denticulate; antero-lateral corners triangular, under margin of carapace denticulate for a space. Median carina of carapace reaching to middle or further, with teeth varying from 5 to 12, with sometimes a single tooth near the hind margin. Pleon segment 5 rather short. Telsonic segment with produced part almost truncate but not sharply. Eyelobe reduced to a little point. Antenna 1, accessory flagellum about three-fourths as long as 1st joint of the principal. Peraeopod 1, 7th joint nearly as long as 6th, 6th much shorter than 5th. Peraeopod 2 with 3^d joint lost or fused, and this joint not very clearly separated from the 2nd

in the next 2 pairs. Peduncle of uropods intermediate in length between the shorter endopod and longer exopod; endopod about two-thirds of exopod, with 1st joint nearly twice as long as 2nd, carrying 6 or 7 spines on the medial margin, the last much the largest; 2nd joint with 4 spines on medial margin and a large terminal. Colour yellowish white. L. ♀ about 5 mm. Adult ♂ not known.

South Georgia, depths 12—310 m.

20. **L. vanhoeffeni** Zimmer 1907 *L. v.*, Zimmer in: *Zool. Anz.*, v. 31 p. 226.

Body rather narrow. Pseudorostral lobes short, bent very obliquely upwards, only subacute; antero-lateral corners preceded by a broad sinus. Median carina of carapace equipped with 5—7 teeth and extending about to the middle. Eyelobe rudimentary. Antenna 1, 1-jointed accessory about three-fourths as long as 1st joint of principal flagellum. Peraeopod 1, 6th and 7th joints equal, 5th longer than either. Peduncle of uropods about three-fourths as long as the exopod and about as long as the endopod, which has about 8 spines on medial margin of 1st joint and 6 on that of the 2nd and a strong apical spine. L., ♀ with commencing marsupium, about 5 mm. Adult ♂ not known.

Kerguelen, on *Macrozystis*.

L. leuckartii Marcusen 1867 *L. l.*, Marcusen in: *Arch. Naturg.*, v. 33 i p. 360 (*descr. nulla*).

Black Sea.

2. Gen. **Eudorella** A. M. Norman

1846 *Leucon* (part.), Kröyer in: *Naturh. Tidsskr.*, ser. 2 v. 2 ii p. 208 | 1856 *Eudora* (non *Eudora*, Péron & Lesueur, 1809 *Hydrozoa*, nec Haan 1833, *Crust.*), Bate in: *Ann. nat. Hist.*, ser. 2 v. 17 p. 457 | 1863 *Cyrianassa* (part.), A. M. Norman in: *Tr. Tyneside Club*, v. 5 iv p. 273 | 1865 *Eudora*, G. O. Sars in: *Forh. Selsk. Christian.*, 1864 p. 184 | 1867 *Eudorella*, A. M. Norman in: *Rep. Brit. Ass.*, v. 36 p. 194, 197 (nota) | 1869 *Eudora* G. O. Sars in: *Nyt Mag. Naturv.*, v. 16 p. 346 | 1871 *Eudorella* (part.), G. O. Sars in: *Svenska Ak. Handl.*, n. ser. v. 9 nr. 13 p. 43 | 1877 *E.* (part.), Meinert in: *Naturh. Tidsskr.*, ser. 3 v. 11 p. 181 | 1879 *E.*, G. O. Sars in: *Arch. Naturv. Kristian.*, v. 4 p. 33 | 1879 *E.* (part.), S. I. Smith in: *Tr. Connect. Ac.*, v. 5 i p. 115 | 1883 *E.*, G. O. Sars in: *Forh. Selsk. Christian.*, 1882 nr. 18 p. 12 | 1887 *E.*, G. O. Sars in: *Rep. Voy. Challenger*, v. 19 pars 55 p. 7, 40 | 1900 *E.*, G. O. Sars, *Crust. Norway*, v. 3 p. 35 | 1900 *E.*, Zimmer in: *Fauna arctica*, v. 1 p. 418, 433 | 1907 *E.*, Calman in: *Tr. zool. Soc. London*, v. 18 i p. 31 | 1908 *E.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 176, 179 | 1909 *E.*, Stappers in: *Cellule*, v. 25 p. 369 (alimentary system).

Body slender. Carapace short, subtruncate. Eyelobe obsolete. Efferent opening for water circulation dorsal. First antennae geniculate between 2nd and 3^d joints. Uropods with exopod shorter than the endopod. Hepato-pancreatic glands with four pairs of lobes.

13 species.

Synopsis of species:

- | | | | |
|---|---|---|--|
| 1 | { | Sinus above antero-lateral corner of carapace simply concave — 2. | |
| | | Sinus above antero-lateral corner of carapace not simply concave — 4. | |
| 2 | { | Uropods having apical spine of endopod fused with the 2 nd joint 1. E. emarginata | |
| | | Uropods having apical spine of endopod distinct — 3. | |

- 3 { Uropods with 1st joint of endopod more than thrice as long as 2nd 2. *E. gracilior*
 { Uropods with 1st joint of endopod little over twice as long as 2nd 3. *E. fallax*
- 4 { Fifth pleon segment with postero-dorsal group of long setae — 5.
 { Fifth pleon segment without postero-dorsal group of long setae — 6.
- 5 { Uropods with 2nd joint of endopod one-third of 1st, apical spine fused 4. *E. nana*
 { Uropod with 2nd joint of endopod one-fourth of 1st, apical spine distinct 5. *E. monodon*
- 6 { Anterior margin of pseudorostral lobes beset with forward pointing setae — 7.
 { Anterior margin of pseudorostral lobes not so beset — 9.
- 7 { Anterior margin of pseudorostral lobes in ♀ denticulate throughout 6. *E. hirsuta*
 { Anterior margin of pseudorostral lobes not denticulate throughout — 8.
- 8 { Uropods with 2nd joint of endopod not one-fourth of 1st, apical spine fused 7. *E. hispida*
 { Uropods with 2nd joint of endopod one-third of 1st, apical spine distinct 8. *E. gracilis*
- 9 { Pseudorostral lobes in ♀ with tuft of long setae on upper margin 9. *E. splendida*
 { Pseudorostral lobes without tuft of setae on upper margin — 10.
- 10 { Uropods with apical spine of endopod fused to 2nd joint — 11.
 { Uropods with apical spine of endopod distinct — 12.
- 11 { Pleon clothed with short hairs 10. *E. truncatula*
 { Pleon hairless 11. *E. pusilla*
- 12 { Projection within frontal sinus dentate 12. *E. abyssi*
 { Projection within frontal sinus smooth 13. *E. sordida*

1. *E. emarginata* (Kröyer) 1846 *Leucon emarginatus*, Kröyer in: Naturh. Tidsskr., ser. 2 v. 2 p. 181, 209, 211 t. 2 f. 3 a—h | 1849 *L. e.*, Kröyer (Petersen del.) in: Voy. Nord. Crust. t. 5 a f. 2 a—s | 1852 *L. e.*, W. Liljeborg in: Öfv. Ak. Förh., v. 9 p. 6 | 1863 *Cyrianassa ciliata*, A. M. Norman in: Tr. Tyneside Club, v. 5 iv p. 273 t. 13 f. 4—9 (♂) | 1865 *Eudora emarginata*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 185 | 1867 *Eudorella e.*, A. M. Norman in: Rep. Brit. Ass., v. 36 p. 194, 197 | 1871 *E. e.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 50 t. 18 f. 98 | 1877 *E. e.*, Meinert in: Naturh. Tidsskr., ser. 3 v. 11 p. 181 | 1879 *E. e.*, S. I. Smith in: Tr. Connect. Ac., v. 5 p. 115 | 1887 *E. e.*, H. J. Hansen in: Vid. Meddel., v. 39 p. 200 | 1889 *E. marginata*, D. Robertson in: P. nat. Hist. Soc. Glasgow, ser. 2 v. 3 i Tr. p. 47 | 1894 *E. emarginata*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 275 | 1900 *E. e.*, G. O. Sars, Crust. Norway, v. 3 p. 36 t. 27, 28 | 1900 *E. e.*, Zimmer in: Fauna arctica, v. 1 p. 418, 433 ff. in text | 1901 *E. e.*, Ohlin in: Bih. Svenska Ak., v. 26 nr. 12 p. 43 | 1905 *E. e.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 21 | 1909 *E. e.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 ii p. 28 | 1911 *E. e.*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 108 | 1912 *E. e.*, Calman in: P. U. S. Mus., v. 41 p. 620.



Fig. 39.
E. emarginata (Kröyer),
 carapace (after Sars).

Body slender, elongate, finely hairy all over. Truncate front fringed with short hairs, smooth except for a short serrate space reaching the semilunar

sinus, which is bounded below by a somewhat upturned sharp tooth. The sinus in the ♂ is much smaller than in the ♀. The lower margin is serrate for some distance back from the antero-lateral corner. The long 5th pleon segment dorsally projects a pair of long setae over the short telsonic segment. Antenna 1 ♀ carrying many plumose setae, 1st joint broader but shorter than either of the subequal 2nd and 3^d joints, 3-jointed flagellum as long as 3^d joint of peduncle, 1-jointed accessory nearly three-quarters as long as the long 1st joint of the principal flagellum; in the ♂ the flagellum is 4-jointed,



Fig. 40.
E. emarginata (♂) (Kröyer)
(after Sars).

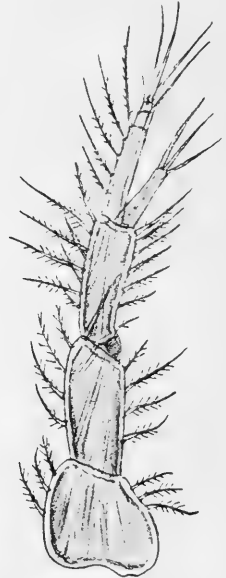


Fig. 41.
E. emarginata (Kröyer), antenna 1 ♀
(after Sars).



Fig. 42.
E. emarginata (♀) (Kröyer), an-
tenna 2 (after Sars).

its 1st joint shorter than the accessory, carrying at the base a dense fascicle of sensory filaments. Antenna 2 of ♀ with 5 plumose setae on the basal joint. Peraeopod 1 with 6th joint much longer than 5th. Peraeopod 2, antepenultimate joint subequal to next preceding joint, terminal joint at least as long as antepenultimate, broad, spatulate, with many radiating spines. Peduncle of uropods a little longer than the exopod, about equal to the first joint of the endopod, which is fringed on the medial margin with numerous unequal spines, and in the ♂ has also several slender setae on the upper

half; the 2nd joint by fusion with the apical spine becomes mucronate, but even with the fusion is only two-fifths of the length of the 1st joint. Colour whitish tinged with grey or yellow. L. about 12 mm.

Norwegian Coast, depths 56—549 m; Spitzbergen, depths 20—435 m; W. Greenland, 772 m; Atlantic coast N. America, 13—126 m; Heligoland; British Isles, 37—108 m; Nova Zembla, 61—90 m.

2. ***E. gracilior*** Zimmer 1907 *E. g.*, Zimmer in: Zool. Anz., v. 37 p. 228 tf. 2, 3 | 1909 *E. g.*, Zimmer in: Ergeb. Schwed. Südpol.-Exp., v. 6 nr. 3 p. 2, 12 t. 3 f. 53—55, t. 4 f. 56—68.

Body and limbs as compared with *E. sordida* (nr. 13) somewhat more slender. Truncate front fringed with short hairs and smooth except for a very small denticulate prominence above the smooth sinus, which is bounded below by a slightly upturned tooth followed by slight denticulation of the lower margin; the sinus, of moderate depth in the ♀, is almost evanescent in the ♂. The 5th pleon segment dorsally projects a group of (4) setae over and beyond the short telsonic segment, which is more produced between the bases of the uropods in the ♂ than in the ♀, ending conically in the former, almost squarely in the latter. Antenna 1 ♀, with many plumose setae, 2nd joint of peduncle the longest, equal to the 4-jointed flagellum, accessory as long as 1st joint of the principal. Antenna 2 of ♀ 1-jointed, with 4 plumose setae. Peraeopod 1, 6th joint more than twice as long as 7th, 5th intermediate in length. Peraeopod 2 having the widened terminal joint at least as long as antepenultimate, begirt with spines. Peduncle of uropods a little shorter than the endopod but longer than its 1st joint, having on its upper side near the end a seta which reaches beyond the rami; exopod broad, two-thirds as long as endopod, 1st joint of the latter between 3 and 4 times as long as the 2nd, its medial margin fringed with numerous unequal spines, apical spine of the 2nd joint distinct. Colour white. L. about 7 mm.

S. Georgia, depths 75—310 m.

3. ***E. fallax*** Zimmer 1909 *E. f.*, Zimmer in: Ergeb. Schwed. Südpol.-Exp., v. 6 nr. 3 p. 2, 9 t. 2 f. 32—39, t. 3 f. 40—47.

Pseudorostral lobes with very small hairs on the rounded top, scarcely any on the slightly convex front which descends without serration to the shallowly quadrate sinus bounded by a small antero-lateral tooth, with very feeble serration of the lower margin. In the ♂ even not adult the sinus disappears. First pedigerous segment firmly united with the carapace. The 5th pleon segment dorsally projects a succession of 6 setae over the short telsonic segment. Antenna 1 ♀, 2nd joint considerably longer than 1st or 3^d, flagellum 4-jointed, accessory almost as long as 1st and 2nd joints of principal combined. Antenna 2 ♀ with 3 setae on 1st joint, small 2nd joint faintly indicated (in figure). Peraeopod 1, 6th joint not much longer than 5th. Peraeopod 2, spinose 7th joint as long as 5th and 6th combined, firmly fixed in an excavation of the 6th. Peraeopod 5 comparatively very small. Peduncle of uropods rather shorter than endopod, of which the 1st joint is subequal to the exopod and more than twice as long as the 2nd joint, with setae on the upper part and unequal spines on the lower part of its medial margin, the series being continued on the 2nd joint, which ends in a strong distinct spine. Colour white. L. ♀ varying round 6.5 mm.

S. Georgia, depths 64—310 m.

4. **E. nana** O. Sars. 1879 *E. n.*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 40 t. 33.

Very like *E. truncatula* (nr. 10), but much smaller. Pseudorostral lobes with very few hairs on rounded upper corner, thence descending smoothly to a single upturned tooth in ♀, followed by 2 downward pointed teeth and then a sinus bounded by a sharp forward directed tooth with some serration of the lower margin; in the ♂ a somewhat sinuous front is bounded by a forward directed tooth without other teeth or serration. The 5th pleon segment projects from its dorsal end a group of setae far over the conically produced telsonic segment. Antenna 1, flagellum in ♀ 3-jointed, accessory longer than 1st joint of principal, but not as in ♂ equal to 1st and 2nd joints combined, flagellum in ♂ 4-jointed. Peraeopod 1 slender, 6th joint somewhat longer than 5th, twice as long as 7th. Peraeopod 2 having terminal joint as long as antepenultimate, beset with spines but not densely. Peduncle of uropods slightly shorter than the exopod, which is slightly longer than 1st joint of the endopod; lower part of peduncle and upper part of endopod having on medial margin in ♂ serrate setae in addition to the fringing spines; 2nd joint of endopod one-third the length of the 1st, apart from the apical spine which appears however to be completely fused with the joint, medial margin having only a subapical spinule. Colour whitish, semipellucid. L. 3 mm.

Mediterranean, Bay of Spezia, depth 38—56 m; Bay of Naples.

5. **E. monodon** Calm. 1912 *E. m.*, Calman in: P. U. S. Mus., v. 41 p. 622 tf. 21—24.

Near to *E. hirsuta* (nr. 6), but serration at upper part of pseudorostral lobes pointing downwards, setae on surface of body sparse and inconspicuous, except those projecting backwards from 5th pleon segment. A minute procurved tooth is situate on the mid-dorsal line of the carapace about one-third of its length from the front. Telsonic segment short, about four-fifths as long as the peduncles of the uropods, between the bases of which it is well produced. Antenna 1, 2nd joint dilated, about two-thirds as broad as long, accessory flagellum not nearly as long as 1st joint of the principal. Peraeopod 1 with 6th joint longer than 5th and more than twice the 7th. Peraeopod 2 with 5th joint about equal to 4th and little longer than 6th and 7th combined. Peduncle of uropods as long as the endopod, 1st joint of which is 4 times as long as the 2nd, carrying numerous spines on the medial margin and setae on the lateral; exopod shorter than the endopod, slightly longer than its 1st joint. L. ♀ 4.7 mm, ♂ unknown.

Beach near Calcasien Pass, Louisiana.

6. **E. hirsuta** (O. Sars) 1869 *Eudora h.*, G. O. Sars in: Nyt Mag. Naturv., v. 16 p. 317, 347 | 1871 *Eudorella h.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 44 t. 18 f. 100 | 1879 *E. h.* (var.?), A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 72 | 1894 *E. h.*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 275 | 1900 *E. h.*, G. O. Sars, Crust. Norway, v. 3 p. 38 t. 30 | 1900 *E. h.*, Zimmer in: Fauna arctica, v. 1 p. 419, 433 tf., 440.

Body very slender and elongate. Pseudorostral lobes clothed in upper part with forward curving setae, the rather sinuously truncate front margin denticulate in ♀ with upward pointing teeth as far as the sinus, which is nearly filled by a prominence serrate downwards and bounded by a very small forward pointing tooth at the end of the serrate part of the lower margin (antero-lateral angle well rounded off, var. Norman); marginal

denticles and sinus wanting in ♂ even when young, adult not known. Antenna 1, 2nd joint considerably longer than 1st or 3^d, accessory not so long as 1st joint of principal flagellum in ♀, but longer than 1st in the 4-jointed flagellum of ♂. Peraeopod 1, 6th joint scarcely longer than 5th. Peraeopod 2, terminal joint less than half the antepenultimate. Peduncle of uropods rather shorter than exopod, which is longer than 1st joint of endopod; endopod's 2nd joint more than a third as long as the 1st, with 3 spines on its medial margin and a quite distinct apical spine. Colour whitish. L. 5 mm.

Coast of Norway, depths 282—377 m; between Ireland and Rockall, 2524 m (Norman).

7. *E. hispida* O. Sars 1871 *E. h.*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 1 p. 80 | 1871 *E. h.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 49 t. 18 f. 95—97 | 1873 *E. h.*, S. I. Smith in: A. E. Verrill in: Rep. U. S. Fish. Comm., v. 1 p. 555 | 1879 *E. h.*, S. I. Smith in: Tr. Connect. Ac., v. 51 p. 115 | 1900 *E. h.*, Zimmer in: Fauna arctica, v. 1 p. 419, 433 tf., 440 | 1905 *E. h.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 21.

Near to *E. emarginata* (nr. 1). Body very narrow and elongate. Pseudorostral lobes clothed in upper part with forward curving setae, the smoothly truncate front ending in a tridentate prominence, upper boundary of the sinus, within which are 2 downward pointing teeth (but this outline variable Calman), the lower boundary being formed by a sharp tooth strongly produced forwards and followed by considerable serration of the lower margin. Fifth pleon segment much the longest, not carrying long backward directed setae, but like all the rest of the integument closely beset with short hairs. Antenna 1, 3^d joint subequal in length to the 2nd, flagellum of ♀ figured as 3-jointed; with 1st joint longer than the 1-jointed accessory. Peraeopod 1, 6th joint very little longer than 5th. Peraeopod 2, antepenultimate joint (true 5th) nearly double as long as the next preceding joint, the 3^d joint being lost or fused; in young male antepenultimate joint once and a half as long as preceding joint (Calman). Peduncle of uropod stout, as long as the exopod which is very little shorter than the endopod; of the latter the second joint is less than a quarter the length of the 1st joint, or with inclusion of the coalesced terminal spine it is half the length of the 1st; spines on medial margin of peduncle 8, 1st joint of endopod 12, 2nd joint 3; there are numerous setae on both rami. L. ♀ juv. 5.5 mm, ♂ juv. 5 mm.

Atlantic coast of N. America, off Nova Scotia, depth 126 m; Bay of Fundy, etc., 2—99 m; W. of Ireland, 366 and 585 m.

8. *E. gracilis* O. Sars 1871 *E. g.*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 6 p. 800 | 1873 *E. g.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 6 p. 8 t. 3 f. 11—13 | 1900 *E. g.*, Zimmer in: Fauna arctica, v. 1 p. 419, 433 tf., 440.

Body very slender and elongate. Pseudorostral lobes on rounded upper front margin carrying hairs of moderate length, otherwise smoothly truncate down to quadridentate upper boundary of the sinus, within which is a bidentate prominence, the lower boundary being a small horizontal antero-lateral tooth followed by slight serration of the lower margin. Pleon hairy, but the long 5th segment not projecting long setae over the telsonic segment, which is well produced conically, with rounded apex, between bases of uropods. Antenna 1, 3^d joint little over half length of 2nd, flagellum 3-jointed, accessory as long as 1st joint of principal. Peraeopod 2 rather large, 3^d joint wanting or fused, 5th considerably longer than the next preceding, terminal oval or broadly

lanceolate, surrounded with radiating spines. Peduncle of uropods scarcely shorter than endopod, of which the 1st joint is thrice as long as the second, the medial margins carrying respectively 7, 8, and 3 spines, the terminal spine on 2nd joint distinct, not so long as the joint; exopod a seventh shorter than the endopod. Integument pellucid. L. ovigerous ♀ about 6.5 mm, ♂ unknown.

Spitzbergen, depth 1017 m.

9. *E. splendida* Zimmer 1902 *E. s.*, Zimmer in: *Ergeb. Hamburg. Magalh.-Sammeln.*, v. 2 Cumac. p. 5, 6 ff. 6, 7 | 1907 *E. similis*, Calman in: *Nat. antarct. Exp.*, v. 2 Crust. Cum. p. 3 ff. 1—6 | 1909 *E. splendida*, Zimmer in: *Ergeb. Schwed. Südpol.-Exp.*, v. 6 nr. 3 p. 11.

Pseudorostral lobes in ♀ subadult (Calman) with tuft of setae on the top. in ♀ and young ♂ the front margin smoothly truncate down to the sinus which has an almost smooth median prominence and is bounded below by a horizontal tooth followed by a smooth lower margin; in adult ♂ (Calman) the front margin is strongly convex, projecting well in front of the single small tooth which defines it below. Fifth pleon segment projecting a pair of long setae over telsonic segment (Calman, not Zimmer, whose specimens were imperfect). Antenna 1 ♀, flagellum 3-jointed, ♂ 4-jointed with accessory as long as first 2 joints of principal combined. Peduncle of uropod subequal to the exopod; endopod longer, with terminal spine fused to 2nd joint (Zimmer) or distinct (in figure by Calman, who likens the uropods to those of *E. truncatula*, in which Sars figures the terminal spine as fused). Colour iridescent. L. ♂ 6 mm, ♀ subadult 5.8 mm.

S. Georgia, edge of low-tide; Coulman Island, depth 183 m.

10. *E. truncatula* (Bate) 1856 *Eudora t.*, Bate in: *Ann. nat. Hist.*, ser. 2 v. 17 p. 457 t. 14 f. 3 | 1857 *E. t.*, A. White, *Hist. Brit. Crust.*, p. 151 | 1859 *E. t.*, Danielssen in: *Norske Selsk. Skr.* 19. Aarh., v. 4 II p. 108 | 1865 *E. t.*, G. O. Sars in: *Forh. Selsk. Christian.*, 1864 p. 186 | 1869 *Eudorella t.*, A. M. Norman in: *Rep. Brit. Ass.*, v. 38 p. 272 | 1871 *E. t.*, G. O. Sars in: *Svenska Ak. Handl.*, n. ser. v. 9 nr. 13 p. 44 t. 18 f. 99 | 1877 *E. inermis* + *E. t.*, Meinert in: *Naturh. Tidsskr.*, ser. 3 v. 11 p. 183 (♂) | 1879 *E. t.*, A. M. Norman in: *Ann. nat. Hist.*, ser. 5 v. 3 p. 72 | 1879 *E. t.*, G. O. Sars in: *Arch. Naturv. Kristian.*, v. 4 p. 34 t. 30—32 | 1894 *E. t.*, A. M. Norman in: *Ann. nat. Hist.*, ser. 6 v. 13 p. 275 | 1897 *E. t.*, Ehrenbaum in: *Wiss. Meeresunters.*, v. 21 p. 412 | 1900 *E. t.*, G. O. Sars, *Crust. Norway*, v. 3 p. 37 t. 29 | 1900 *E. t.*, Zimmer in: *Fauna arctica*, v. 1 p. 419, 433 ff., 440 | 1905 *E. t.*, Calman in: *Sci. Invest. Fish. Ireland*, 1904 app. 1 p. 21 | 1907 *E. t.*, Calman in: *Tr. zool. Soc. London*, v. 181 p. 33 | 1909 *E. t.*, A. M. Norman & G. S. Brady in: *Nat. Hist. Tr. Northumb.*, ser. 2 v. 3 II p. 28 | 1912 *E. t.*, Calman in: *P. U. S. Mus.*, v. 41 p. 620.

Integument thin and flexible, beset with short hairs, clearly squamose. Body slender, especially the pleon. Pseudorostral lobes in the ♀ with a few stiff setae on the rounded upper front corner, smoothly truncate in front down to the denticulate, slightly prominent upper boundary of the sinus, the middle of which is occupied by a prominence with 3 downward pointing denticles, while its lower boundary is formed by an upward pointing tooth followed by some serration of the lower margin. In the male the sinus is replaced by a smooth convexity. The 2nd and 3^d pedigerous segments have the side-plates rather widely outstanding. The 5th pleon segment does not project long setae over the short telsonic segment. Antenna 1, 3^d joint shorter than 2nd, flagellum in ♀ 3-jointed, its long 1st joint scarcely longer than the 1-jointed accessory; flagellum in ♂ 4-jointed, with a tuft of long filaments

on the 2nd joint. Antenna 2 ♀ with 3 plumose setae and no division into 2 joints. Maxilliped 3 with a hooked spine on medial margin of the 2nd and another on that of the 4th joint. Peraeopod 1 long and slender, its 7th joint half as long as 6th, and about three-quarters as long as 5th. Peraeopod 2 rather stout, not long, its terminal joint spade-like surrounded by a moderate number of radiating spines. Peduncle of uropods a little longer than the exopod, a little shorter than the endopod, in which the terminal spine is fused with the 2nd joint; 2nd joint apart from the spine about two-fifths of 1st in ♀, about one-third in the ♂, carrying 3 spines on medial margin in ♀, in ♂ 5 (Mediterranean), 1 (Norwegian). Colour whitish, semipellucid. L. about 5 mm.

S. and W. Norway, to Lofoten Is., 11—56 m; Mediterranean, 38—47 m; various seas between these latitudes, at various depths from shallow water. W. Ireland, through depths reaching 549 m, at Trondhjemsfjord and at lat. 55° 11' N., long. 11° 31' W. 2639 m; U. S. A., Vineyard Sound, etc., depths 29—97 m.

11. *E. pusilla* O. Sars 1871 *E. p.*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 1 p. 79 and Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 46 t. 16 f. 76—78; t. 17 f. 79—94 | 1879 *E. p.*, S. I. Smith in: Tr. Connect. Ac., v. 51 p. 116 | 1900 *E. p.*, Zimmer in: Fauna arctica, v. 1 p. 419, 433 ff., 440 | 1912 *E. truncatula*, Calman in: P. U. S. Mus., v. 41 p. 620.

In shape and size very near to *E. truncatula* (nr. 10), but distinguished by the upper margin of the pseudorostral lobes which is vaulted in profile, not flattened, and the frontal part almost entirely without setae; the pleon also is without trace of hairs. Calman mentions a procurved dorsal tooth on the carapace close to hind margin of respiratory opening as occasionally present. Antenna 1 comparatively stronger, with the 3^d joint relatively short and more widened apically; maxilliped 3 without hooked spine on 2nd or 4th joint (as figured); peduncle of uropod as long as 1st joint of endopod which is longer than the exopod and 4 times as long as the 2nd joint not including the fused terminal spine. L. ovigerous ♀ 4.5 mm, ♂ undescribed.

Atlantic coast of N. America, depths 2—46 m.

12. *E. abyssi* O. Sars 1887 *E. a.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 9, 41 t. 5 f. 5—12.

Body moderately slender, integument thin, beset with scattered short hairs. Pseudorostral lobes smoothly truncate in front down to tridentate prominence bounding the sinus, which is nearly filled by quinquedentate prominence and bounded below by small antero-lateral tooth with succeeding serration of lower margin. Pleon segment 5 without backward projecting setae. Antenna 1 rather stout, flagellum 3-jointed, 1-jointed accessory as long as 1st joint of principal. Peraeopod 1, 7th joint half as long as 6th, which is a little longer than the 5th. Peraeopod 2, terminal joint almost linear, but as usual fringed with divergent spines. Peduncle of uropods about equal to endopod, in which the 2nd joint is less than a quarter as long as the 1st, with 4 spines on medial margin and a distinct terminal spine, the 1st joint as long as the exopod and fringed with numerous spines. L. ♀ about 9 mm, ♂ unknown.

N. Atlantic, lat. 38° 34' N., long. 72° 10' W., depth 2268 m.

13. *E. sordida* Zimmer 1907 *E. s.*, Zimmer in: Zool. Anz., v. 31 p. 227 tf. 1 | 1909 *E. s.*, Zimmer in: Ergeb. Schwed. Südpol.-Exp., v. 6 nr. 3 p. 10 t. 3 f. 48—52.

Das Tierreich. 39. Lief.: T. R. R. Stebbing, Cumacea.

Extremely like *E. fallax* (nr. 3), but the carapace slightly more slender, the pseudorostral lobes meeting very far to the rear, the respiratory opening at the top surrounded by long setae, the sinus in front not quadrate but occupied by a prominence giving a sinuous outline bounded below by an antero-lateral tooth, variable yet decidedly larger than in the other species, the same superiority attaching to this tooth also in the male; setae on the 5th pleon segment either wanting or not nearly as long as the telsonic segment; antenna 1, with accessory flagellum only about as long as the 1st joint of the principal. L. about 7 mm.

S. Georgia, depths from 12—250 m.

3. Gen. **Eudorellopsis** O. Sars

1883 *Eudorellopsis*, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 12, 56 | 1900 *E.*, G. O. Sars in: Crust. Norway, v. 3 p. 39 | 1900 *E.*, Zimmer in: Fauna arctica, v. 1 p. 431.

Near to *Eudorella*, but body short and compact, pleon relatively short. First antenna geniculate between the first and second joints. Uropods with the exopod longer than the endopod.

4 species.

Synopsis of species:

- | | | | |
|---|---|--|-------------------------------|
| 1 | { | Pseudorostrum with upturned process behind branchial orifice | 1. <i>E. deformis</i> |
| | { | Pseudorostrum with upturned process frontal — | 2. |
| 2 | { | Sides of carapace smooth | 2. <i>E. integra</i> |
| | { | Sides of carapace not smooth — | 3. |
| 3 | { | Carapace with longitudinal ridge on each side | 3. <i>E. resima</i> |
| | { | Carapace with 2 oblique curved ridges on each side | 4. <i>E. biplicata</i> |

1. ***E. deformis*** (Kröyer) 1846 *Leucon d.*, Kröyer in: Naturh. Tidsskr., ser. 2 v. 211 p. 194, 209 t. 2 f. 4 | 1849 *L. d.*, (Petersen del.) Kröyer in: Voy. Nord, Crust. t. 5a f. 3a—h | 1865 *Eudora d.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 60 | 1871 *Eudorella* (?) *d.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 44, 50 t. 19 f. 101—103, t. 20 f. 104—118 | 1877 *E. d.*, Meinert in: Naturh. Tidsskr., ser. 3 v. 11 p. 184 | 1883 *Eudorellopsis d.*, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 12, 56 | 1886 *E. d.*, G. O. Sars in: Norske Nordhavs-Exp., v. 6 nr. 15 p. 20 | 1887 *E. d.*, H. J. Hansen in: Vid. Meddel., v. 39 p. 200 | 1897 *E. d.*, Ehrenbaum in: Wiss. Meeresunters., v. 21 p. 413 | 1900 *E. d.*, G. O. Sars in: Crust. Norway, v. 3 p. 40 t. 31, 32 | 1900 *E. d.*, Zimmer in: Fauna arctica, v. 1 p. 420, 433, 440 | 1905 *E. d.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 22 | 1909 *E. d.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 311 p. 29 | 1912 *E. d.*, Calman in: P. U. S. Mus., v. 41 p. 623.

Pseudorostral lobes with sharp process erected to the rear of the dorsal branchial orifice, front steeply truncate and fringed throughout in ♀ but less completely in ♂ with broad lamellar teeth, antero-lateral corners triangularly produced in ♀, smooth above, with serrate lower margin. Pleon segments 1—5 with ventral setae. Telsonic segment with 2 setae and 2 setules (figured) on hind margin. Antenna 1, 3^d joint shorter than 1st, longer than 2nd, flagellum 3-jointed, accessory 1-jointed, about half as long as 1st joint of principal. Peraeopod 1, 5th and 6th joints subequal, 7th shorter and very narrow. Peraeopod 2, terminal joint at least as long as antepenultimate, with 5 apical

and 2 lateral spines. Uropods more robust in ♀ than in ♂, the peduncle in the former longer than the endopod, but shorter in the latter, in both sexes shorter than the exopod, which is much longer than the endopod and in the ♀ is very broad, carrying on the obliquely truncate apex several setae and rows of strong spines on its dorsal surface; this ramus in the ♂ is more slender, less strongly spined but carrying longer setae; 2nd joint of endopod small, a third as long as the 1st joint or less, with small apical spine. L. ♀ 5 mm, ♂ 4.5 mm.

Greenland, Iceland, Norway, Denmark, German Ocean, Irish Sea, N. of England, U. S. of America; surface to 56 m; off Nova Scotia, depth 103 m.

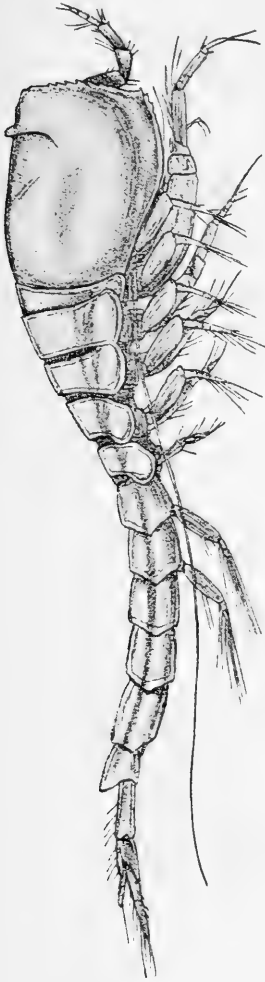


Fig. 43.

E. deformis (♂) (Krøyer) (after Sars).



Fig. 44.

E. deformis (♂) (Krøyer), uropod (after Sars).

2. *E. integra* (S. I. Smith) 1879 *Eudorella* (?) *i.*, S. I. Smith in: Tr. Connect. Ac., v. 51 p. 116 | 1887 *Eudorellopsis i.*, H. J. Hansen in: Vid. Meddel., v. 39 p. 201 t. 7 f. 3, 3a—d | 1893 *E. i.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 305 | 1900 *E. i.*, G. O. Sars, Crust. Norway, v. 3 p. 39 | 1900 *E. i.*, Zimmer in: Fauna arctica, v. 1 p. 420, 433, 440 | 1912 *E. i.*, Calman in: P. U. S. Mus., v. 41 p. 624.

Pseudorostral lobes with dorsal process acute, erected close behind the frontal margin, which is smooth, bulging above, then descending with slight obliquity to the little produced antero-lateral rounded corner, followed in the ♀ by faint denticulation of the lower margin; in the ♂ no denticulation

and the corner not produced. Carapace sometimes with minute denticle dorsally one-third of length from front. Pleon segments without ventral setae. Hind margin of telsonic segment, in ♀ only, carrying 4—6 conspicuous setae. Antenna 1 ♀ nearly as in *E. deformis* (nr. 1), but 1-jointed accessory equal in length to 1st joint of principal flagellum (H. J. Hansen), considerably shorter than that joint (Smith) though relatively larger than in *E. deformis*; in ♂ flagellum 4-jointed, accessory 2-jointed. Peraeopod 1, 7th joint little shorter than 6th. Uropods, like the limbs, less robust than in the preceding species; peduncle in both sexes shorter than the endopod, in which the 2nd joint is half as long as the 1st in ♀, a little less in ♂, where both joints are strongly setose; exopod considerably longer, tapering, slightly curved outward at the apex, carrying several setae on distal part of medial margin and at the apex, very long and closely set in the ♂. L. ♀ about 5 mm, ♂ a very little longer.

W. Greenland, Atlantic coast of N. America, depths 28—506 m; Bering-Sea, depths 52—65 m.

3. ***E. resima*** Calm. 1907 *E. resimus*, Calman in: Tr. zool. Soc. London, v. 181 p. 33 t. 8 f. 6—10.

Pseudorostral lobes directed upwards with slight inclination forwards, distal end truncated, in lateral view a broad triangle rising above the dorsal line of the carapace, frontal margin coarsely serrate, receding to the small antero-lateral tooth which defines a very small sinus. Carapace with forward pointing median tooth near the end, the sides traversed from end to end by a curved ridge. Antenna 1, 1-jointed accessory as long as 1st joint of 3-jointed principal flagellum. Peraeopods 1, 2 short. Uropods short and stout, exopod nearly twice as long as peduncle, roughened on surface with irregular tubercles or blunt teeth; endopod only a little shorter, 1st joint twice as long as 2nd, apical spine long and stout. L. ♀ 1.75 mm, ♂ unknown.

New Zealand, Lyttleton Harbour.

4. ***E. biplicata*** Calm. 1912 *E. b.*, Calman in: P. U. S. Mus., v. 41 p. 625 tf. 25, 26.



Fig. 45.
E. biplicata Calman,
telson and uropod.

Pseudorostral lobes nearly vertical, acute, front margin concave. Carapace little longer than deep, front margin sinuous with upper part faintly serrate, sides having each 2 oblique curved ridges. Pedigerous segment 1 firmly united to the carapace. Telsonic segment about as long as the short broad peduncle of the uropods, the produced portion broadly rounded and marked off by a distinct transverse groove. Maxilliped 3 with 2nd joint nearly twice as long as the rest combined. Peduncle of uropods scarcely two-thirds as long as the exopod, which has the apex narrowed and curved outward; the rather shorter endopod has a 1st joint thrice as long as the 2nd, which is tipped with a short stout spine. L. ♀ 5.5 mm, ♂ unknown.

Atlantic lat. 45° 29' N., long. 55° 24' W., depth 121 m; lat. 45° 04' 00" N., long. 59° 36' 45" W., depth 103 m.

4. Gen. **Pseudoleucon** Zimmer

1903 *Pseudoleucon* (Sp. un.: *P. sorex*), Zimmer in: Zool. Jahrb., Syst. v.18vi p. 676 | 1907 *P.*, Calman in: Tr. zool. Soc. London, v.18i p.31,34 | 1908 *P.*, Zimmer in: Ergeb. Tiefsee-Exp., v.8 p.176.

Body slender, laterally compressed. Pseudorostral lobes forming an acute obliquely upward directed pseudorostrum. Branchial orifice not dorsal. Pleon short. First antenna strong, geniculate between first and second joints. Second antenna of female with 2 plumose setae. Maxilla 1 with small process on lateral margin of palp. Peraeopod 2 with 3^d joint short but distinct. Uropods with endopod much shorter than exopod.

1 species.

1. ***P. sorex*** Zimmer 1903 *P. s.*, Zimmer in: Zool. Jahrb., Syst. v.18vi p.677 ff. s—v.

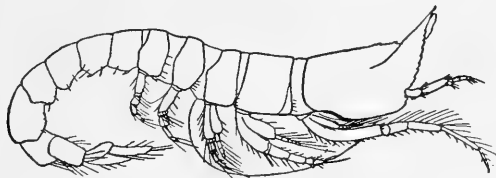


Fig. 46.
P. sorex (♀) Zimmer.



Fig. 47.
P. sorex (♀) Zimmer,
antenna 1.



Fig. 48.
P. sorex (♀) Zimmer,
maxilliped 3.



Fig. 49.
P. sorex (♀) Zimmer,
uropod.

The pseudorostral lobes meet immediately behind the minute eyelobe, with edges in contact to the obliquely raised acute apex, to which a small seta is attached, frontal margin except near narrowed apex serrate with intervening setules, sinus small with bulge adjoining the small antero-lateral

tooth. Carapace with a transverse pair of denticles behind the eyelobe, and a longitudinal couple a little further back. Pedigerous segments together longer than carapace, 1st short, 2nd long, last four well separated, with short setae on antero-lateral margins. Pleon ventrally with scattered plumose setae. telsonic segment with setae dorsally on the hind margin. Antenna 1, 3^d joint longer than 2nd. Peraeopod 1 with small seta at apex of 7th joint. Peraeopod 2, 7th joint tipped with several setae, one very long, this joint longer than the 6th, but shorter than either the 4th or the 5th. Peraeopods 3—5 with 7th joint minute. Peduncle of uropods as long as endopod, two-thirds of the length of the exopod, with oblique series of setae on surface and several setae on apical margin, some very long; second joint of endopod half as long as 1st, tipped with a strong spine; on the long outward curving exopod there are many spines, passing distally into plumose setae. Colour brown. L. about 4.5 mm.

Enosima, Japan, depth 6—23 m.

10. Fam. **Diastylodidae**

1812 *Diastylodidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 133, 146.

Telson narrowly elongate, with only 2 apical spines. Antenna 1 with slight flagella. Antenna 2 of female not strongly developed, flagellum in male elongate. Mandibles with base of trunk broad. Exopods on peraeopods 1—4 in male, only on the first 2 pairs in female. Only 2 pairs of pleopods in the male, the small rami of the 1st both single-jointed, in the 2nd confluent to a single piece. Uropods with slender rami, the 3-jointed endopod not differing much in length from the exopod.

1 genus.

1. Gen. **Diastylodes** O. Sars

1900 *Diastylodes*, G. O. Sars in: Crust. Norway, v. 3 p. 60 | 1900 *D.*, Zimmer in: Fauna arctica, v. 1 p. 426, 431 | 1908 *D.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 181, 182 | 1912 *D.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 146.

Eye wanting. Antenna 2 of female without apical plumose seta on small terminal joint. Peraeopod 1 with 6th joint elongate. Peraeopod 2 with 2nd joint apically produced.

2 species.

Synopsis of species:

- | | |
|---|-------------------------|
| { Carapace without pairs of oblique carinae | 1. <i>D. serratus</i> |
| { Carapace with 2 pairs of oblique carinae | 2. <i>D. biplicatus</i> |

1. *D. serratus* (O. Sars) 1865 *Diastylis serrata*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 169 | 1894 *D. serratus*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 276 | 1900 *Diastylodes serrata*, G. O. Sars, Crust. Norway, v. 3 p. 61 t. 45 | 1900 *D. s.*, Zimmer in: Fauna arctica, v. 1 p. 426 (with synonymy) | 1905 *D. s.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 47.

Pseudorostral lobes much produced, especially in ♀ in which the acuminate tip is slightly depressed; antero-lateral corners obsolete. Carapace smooth in ♂, large in ♀ with serrate lower margin and branchial regions roughened with minute forward pointing denticles; eyelobe minute. Pedi-

gerous segment 5 with postero-lateral angles acute, in the ♂ produced. Telson much shorter than peduncle of the uropods, with 5 pairs of lateral spines on distal half in the ♀, longer and much narrower with angular projection in the ♂. Antenna 1 with 1st joint shorter than 2nd and 3^d combined, the principal flagellum small, 5-jointed in ♂, 3-jointed in ♀, accessory 3-jointed. Antenna 2 of ♀ with 3 terminal joints very short. Mandibles with conical process over the molar, spines of spine-row not numerous. Peraeopod 1,



Fig. 50.
D. serratus (Sars),
mandible.



Fig. 51.
D. serratus (Sars), peraeopod 1.



Fig. 52.
D. serratus Sars,
pleopod 1.



Fig. 53.
D. serratus (Sars),
pleopod 2.

2nd joint spinose, much shorter than rest of limb, 6th joint shorter than 2nd more than twice as long as 7th. Peraeopod 2 with spine on apex of the 3^d joint. Peduncle of uropods longer than the rami, the endopod rather the longer, especially in the ♂, the first joint much longer than the 2nd and 3^d combined, spines on medial margin of the 3 respectively in the ♀ 9, 2, 1, in the ♂ 13, 3, 2. Colour yellowish white. L. ♀ 6 mm, ♂ 7 mm.

Norway, Christianiafjord, 56—188 m, West Finmark, 565 m; off Skagen lighthouse; off Yorkshire coast, 7—11 m; Mediterranean, near Capri, depth 950 m.

2. **D. biplicatus** O. Sars 1865 *Diastylis biplicata*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 171 | 1867 *D. lamellata*, A. M. Norman in: Rep. Brit. Ass., v. 36 p. 197, 200 | 1879 *D. calveri*, ♂ A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 63 | 1894

D. biplicatus, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 276 | 1897 *D. biplicata*, T. Scott in: Rep. Fish. Board Scotl., v. 15 p. 134 | 1900 *Diastylodes b.*, G. O. Sars, Crust. Norway, v. 3 p. 62 t. 46 | 1900 *D. b.*, Zimmer in: Fauna arctica, v. 1 p. 426 (with synonymy) | 1905 *D. b.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 5, 48 | 1909 *D. b.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 311 p. 33.



Fig. 54.
D. biplicatus (Sars), pereopod 1.

Pseudorostral lobes well produced, slightly upturned, anterolateral corners obsolete. Carapace with 2 pairs of lateral oblique carinae, and hind margin also carinate, with an infero-lateral carina added in the ♂, only anterior half of lower margin serrate. Telson shorter than peduncle of uropods, with 6 pairs of lateral spines, geniculate in ♂ at about one-third of its length. Peraeopod 1 elongate, especially in regard to the 6th joint, which is as long as the 2nd. Peraeopod 2 with both 2nd and 3^d joints produced to a spiniform apex. Peduncle of uropods in the female little longer than the endopod, which exceeds the exopod by its 3^d joint or more, spines on medial margin of its 3 joints respectively in ♀ 9, 2, 1, in ♂ 20, 4, 2. Colour tinged with reddish brown. L. ♀ 7 mm, ♂ about 8 mm.

Norway, with *D. serratus*; Skagerrak and Kattegat; round Scotland; N. E. England, 71—82 m; off W. of Ireland, depth 220—2980 m.

11. Fam. Diastylidae

1856 *Diastylidae*, Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 449 | 1859 *D.*, Danielssen in: Norske Selsk. Skr. 19. Aarh., v. 411 p. 108 | 1863 *D.*, A. M. Norman in: Tr. Tyneside Club, v. 51v p. 271 | 1864 *D.*, Fr. Müller, Für Darwin, p. 55 | 1878 & 1879 *D.* (restricted), G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 466; v. 4 p. 44 | 1887 *D.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 7, 43 | 1893 *D.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 311, 312 | 1900 *D.*, G. O. Sars, Crust. Norway, v. 3 p. 41 | 1900 *D.*, Zimmer in: Fauna arctica, v. 1 p. 420, 433 | 1908 *D.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 181 | 1911 *D.*, Calman in: Tr. zool. Soc. London, v. 181v p. 342, 366 | 1912 *D.* (further restricted), T. Stebbing in: Ann. S. Afr. Mus., v. 10v p. 133, 146,

Of the pedigerous segments the first and usually the rest distinct. Telson well developed, with only two apical spines. Accessory flagellum of first antenna distinct, mandibles normal, not broad at the base. Palp of first maxilla with two filaments. Branchial leaflets numerous. Exopods on the first two pairs of peraeopods, also on the third and fourth pairs in the male but not in the female, except occasionally as rudiments. Two pairs of pleopods in the male. Uropods with the endopod three-jointed.

8 genera accepted.

Synopsis of genera:

- 1 { Telson comparatively long — 2.
Telson comparatively short — 6.
- 2 { Post-anal portion of telson long — 3.
Post-anal portion of telson not long — 5.
- 3 { Peraeopods 2, 3, of adult ♀ not widely separated . 1. Gen. **Diastylis**¹⁾
Peraeopods 2, 3, of adult ♀ widely separated — 4.
- 4 { Pseudorostrum in ♀ strongly upturned and peraeopods 3, 4, without exopods 2. Gen. **Brachydiastylis**
Pseudorostrum not strongly upturned, and peraeopods 3, 4, in ♀ with rudimentary exopods 3. Gen. **Diastylopsis**
- 5 { Telson with lateral spines on the post-anal portion 4. Gen. **Adiastylis**
Telson without lateral spines on the post-anal portion 5. Gen. **Makrokyllindrus**
- 6 { Maxilliped 3 in ♀ without exopod 6. Gen. **Paradiastylis**
Maxilliped 3 with exopod in both sexes — 7.
- 7 { Lateral spines of telson few or none 7. Gen. **Leptostylis**
Lateral spines of telson numerous 8. Gen. **Ekleptostylis**

1. Gen. **Diastylis** Say

1780 *Oniscus* (part.), Lepechin in: Acta Ac. Petrop., 1778 v.1 p.248 | 1818 *Diastylis*, Say in: J. Ac. Philad., v.111 p.313 | 1825 *D.*, A. G. Desmarest, Consid. gén. Crust., p.245 | 1829 *Condylura* (non Illiger 1811), Latreille in: G. Cuvier, Règne an., ed.2 v.4 p.153 | 1831 *C.*, Latreille, Cours Ent., v.1 p.416 | 1840 *Condylurus*, H. Milne-Edwards, Hist. nat. Crust., v.3 p.553 | 1841 *Cuma* (part.), Kröyer in: Naturh. Tidsskr., v.3 v1 p.503 | 1843 *Alauna*, Goodsir in: Edinb. new phil. J., v.34 p.120, 129 | 1844 *Diastylis*, De Kay, Zool. N. York, pars 6 p.32 | 1851 *Astaricilla* (?), Dalyell, Powers Creator, v.1 p.224, *Asteracilla*, v.1 p.226 t.62 | 1856 *Diastylis*, Bate in: Ann. nat. Hist., ser.2 v.27 p.451 | 1856 *Scorpionura* (part.), J. V. Thompson MS. in: W. Thompson, Nat. Hist. Ireland, v.4 p.394 | 1865 *Diastylis*, G. O. Sars in: Forh. Selsk. Christian., 1864 p.156, *Goniacis*, nom. nud. for *D.* ♂ G. O. Sars, p.159 | 1900 *D.*, G. O. Sars, Crust. Norway, v.3 p.42 | 1900 *D.*, Zimmer in: Fauna arctica, v.1 p.420, 434 | 1909 *D.*, Stappers in: Cellule, v.25 p.368 (alimentary system) | 1912 *D.*, T. Stebbing in: Ann. S. Afr. Mus., v.10 v p.147.

Pseudorostral lobes with antero-lateral corners usually little produced. Telson long, post-anal portion narrowly produced, elongate, with several pairs of lateral spines. Second antenna of adult ♂ usually very long. Third maxilliped with exopod in both sexes. Third peraeopod as a rule not widely separated from the second in the adult female. Both pairs of pleopods in the male well developed, the endopod two-jointed. Hepatopancreatic glands with three pairs of lobes.

31 species accepted, 2 doubtful.

Synopsis of accepted species:

- 1 { Peraeopods 3, 4, of ♀ with rudimentary exopods — 2.
Peraeopods 3, 4, of ♀ without rudimentary exopods — 6.
- 2 { Maxilliped 3 with 2nd joint not expanded distally — 3.
Maxilliped 3 with 2nd joint expanded distally — 4.
- 3 { Carapace with 2nd pair of carinae produced below to a strong tooth 1. **D. bidentatus**
Carapace with 2nd pair of carinae not forming a tooth 2. **D. dalli**

¹⁾ *D. sulcatus* is an exception.

- 4 { Carapace with few ridges 3. *D. planifrons*
 { Carapace with many ridges — 5.
- 5 { Carapace 6—ridged 4. *D. alaskensis*
 { Carapace 10—ridged 5. *D. anderssoni*
- 6 { Uropods with endopod longer than the exopod — 7.
 { Uropods with endopod not longer than the exopod — 9.
- 7 { Peduncle of uropods about twice as long as the telson . . 6. *D. hammoniae*
 { Peduncle of uropods not nearly twice as long as the telson — 8.
- 8 { Telson shorter than fifth segment of the pleon 7. *D. antillensis*
 { Telson longer than fifth segment of the pleon 8. *D. koreanus*
- 9 { Pedigerous segments 3, 4, with dorsal separation faint . . 9. *D. algoae*
 { Pedigerous segments 3, 4, with dorsal separation distinct — 10.
- 10 { Telson longer than peduncle of uropods — 11.
 { Telson not longer than peduncle of uropods — 12.
- 11 { Pedigerous segments and pleon spinulose 10. *D. spinulosus*
 { Pedigerous segments and pleon smooth 11. *D. armatus*
- 12 { Post-anal part of telson distinctly the longer — 13.
 { Post-anal part of telson not distinctly the longer — 25.
- 13 { Pedigerous segment 5 with hind corners acutely produced — 14.
 { Pedigerous segment 5 with hind corners not acutely produced — 19.
- 14 { Carapace of female with very conspicuous spines — 15.
 { Carapace without very conspicuous spines — 16.
- 15 { Hind margin of carapace conspicuously upturned 12. *D. bispinosus*
 { Hind margin of carapace not conspicuously upturned . . 13. *D. cornutus*
- 16 { Carapace smooth 14. *D. laevis*
 { Carapace more or less denticulate — 17.
- 17 { No distinct eye 15. *D. sulcatus*
 { Eye distinct — 18.
- 18 { Peraeopod 2 with 7th joint longer than 6th 16. *D. rathkii*
 { Peraeopod 2 with 7th joint not longer than 6th 17. *D. bradyi*
- 19 { Eye wanting or inconspicuous — 20.
 { Eye distinct — 22.
- 20 { Pleon segments 1—5 with hind angles acutely produced outwards 18. *D. goodsiri*
 { Pleon segments 1—5 with hind angles not produced outwards — 21.
- 21 { Pleon spinulose 19. *D. stygius*
 { Pleon not spinulose 20. *D. polaris*
- 22 { Carapace without transverse pleats — 23.
 { Carapace with transverse pleats — 24.
- 23 { Pleon unarmed 21. *D. lucifer*
 { Pleon segments 1—3 with strong dorso-lateral teeth . . 22. *D. rugosoides*
- 24 { Carapace with 5 pairs of obliquely transverse pleats . . 23. *D. scorpioides*
 { Carapace with fewer than 5 pairs of pleats 24. *D. rugosus*
- 25 { Eye distinct — 26.
 { Eye wanting or obscure — 27.
- 26 { Pseudorostral lobes not much produced 25. *D. tumidus*
 { Pseudorostral lobes well produced 26. *D. neapolitanus*
- 27 { Pedigerous segment 5 with hind corners acutely produced — 28.
 { Pedigerous segment 5 with hind corners not acutely produced — 29.

- 28 { Carapace mapped into polygonal areas by spines and spinules 27. *D. echinatus*
 { Carapace girdled by 3 nearly parallel ridges 28. *D. tricinetus*
- 29 { Telson scarcely half as long as peduncle of uropods . . . 29. *D. nucella*
 { Telson nearly as long as peduncle of uropods — 30.
- 30 { Telson with few lateral spinules 30. *D. anomalus*
 { Telson with many lateral spinules 31. *D. asper*

1. *D. bidentatus* Calm. 1880 *D. sp.*, Stuxberg in: Bih. Svenska Ak., v. 5 nr. 22
 p. 29 | 1882 *D. sp.*, Stuxberg in: Vega-Exp., v. 1 p. 715 | 1882 *D. picta*, Stuxberg in:
 A. M. Norman, Mus. Norm., p. 10 | 1912 *D. bidentata*, Calman in: P. U. S. Mus., v. 41
 p. 605, 637 ff. 45—50 | 1912 *D. picta*, Calman in: P. U. S. Mus., v. 41 p. 636 (corrected in litt.)

In general like *D. scorpioides* (nr. 23), but surface of carapace smoother, the ridges very finely crenulated, only 4 oblique ridges on each side, the 2nd a little way from its lower end produced into a strong tooth pointing sharply outward and forward, eyelobe carrying a few small denticles, and frontal lobe 2 short transverse denticulated ridges; telson longer than peduncle of uropods, its post-anal section much the longer with about 10 pairs of lateral spines. Antenna 1, 3^d joint longer than 2nd, 1st shorter than the 2 combined. Antenna 2 of ♀, penultimate joint elongate. Maxilliped 3, 2nd joint not expanded distally, 3^d wider than 4th. Peraeopod 1, 2nd joint longer than rest of limb, 5th, 6th, and 7th subequal. Peraeopod 2, 5th joint little longer than 6th and 7th combined. Exopod on 3^d and 4th limbs of ♀ rudimentary, 2-jointed. Endopod of uropods very slightly longer than exopod, about $\frac{3}{4}$ ths as long as the peduncle, 1st joint nearly twice 2nd and 3^d combined, spines of medial margin respectively 10, 2, 2. Colour red and yellow (Stuxberg). L. about 12 mm, in ♀ varying from less to much more.

At various stations of the „Alaskan area, including Aleutian Islands, and the Pacific coast of N. America north of Puget Sound“, from depths between 11 and 166 m.

2. *D. dalli* Calm. 1912 *D. d.*, Calman in: P. U. S. Mus., v. 41 p. 605, 635 ff. 40—44.

In general like *D. scorpioides* (nr. 23), but surface of carapace much smoother, ridges not crenulated, only 4 oblique ridges on each side, the 2nd not forming a prominent tooth, the pseudorostral lobes less produced than in *D. bidentatus*; telson a little shorter than the peduncle of the uropods, post-anal section much the longer, lateral spines about 11 pairs. Antenna 1, 3^d joint longer than 2nd, 1st than the 2 combined. Antenna 2 of ♀, penultimate joint elongate. Maxilliped 3, 2nd joint not distally expanded, 3^d not wider than 4th. Peraeopod 1, 2nd joint much longer than rest of limb, 5th a little shorter than 6th or 7th which are subequal. Peraeopod 2, 5th joint a little longer than 6th and 7th combined. Exopod on 3^d and 4th limbs of ♀ rudimentary, 2-jointed. Endopod of uropods very slightly longer than the exopod, about half as long as the peduncle, 1st joint much longer than 2nd and 3^d combined, spines of medial margin respectively 9, 3, 2. L. ♀ 24 mm.

Alaskan area, depth 24—146 m; Sea of Okhotsk, 137 m.

3. *D. planifrons* Calm. 1912 *D. p.*, Calman in: P. U. S. Mus., v. 41 p. 605, 643 ff. 58—61.

Pseudorostral lobes well produced, horizontal, acute, antero-lateral corner obtuse. Carapace with prominent oblique ridge on each side starting from the pseudorostral lobes and forming a prominent blunt tooth at its junction with a curved ridge running up from the lower edge; to the rear the oblique ridges meet a pair of convergent longitudinal ridges, while in front a blunt

median ridge runs between them. Pedigerous segment 5 with hind corners acute, little produced; telson about $\frac{2}{3}$ ds as long as peduncle of uropods, its post-anal section the shorter, with 5 pairs of lateral spines. Eye with 3 corneal lenses. Maxilliped 3, 2nd joint much widened distally, produced into a small lobe laterally, 4th wider than 3^d, produced into a curved tooth laterally. Peraeopod 1, 5th joint longer than 6th. Peraeopod 2, 5th joint nearly twice as long as 6th and 7th combined. Exopod on 3^d and 4th limbs of ♀ rudimentary, 2-jointed. Exopod of uropods half as long as the peduncle, a little longer than the endopod, in which the 1st joint is longer than the 3^d, the 3^d than the 2nd, the 2 combined rather longer than the 1st, spines of the medial margin respectively 6, 4, 4. L. ♀ 14 mm.

S. America, lat, 51° 34' S., long. 68° W., 91 m; Straits of Magellan, 112 m.

4. **D. alaskensis** Calm. 1912 *D. a.*, Calman in: P. U. S. Mus., v. 41 p. 605, 641 ff. 51—57.

Pseudorostral lobes much and acutely produced. Carapace narrowing forwards, more or less completely encircled by 6 transverse ridges in the ♀, the 6th obscure in the ♂, the hind margin upturned. Eyelobe rather longer than broad; hinder angles of 5th pedigerous segment blunt; pleon segments 1, 2, of ♂ each with a medio-ventral spine; telson rather less than $\frac{2}{3}$ ds as long as peduncle of the uropods, post-anal section the longer, with about 6 pairs of lateral spines. Antenna 1, 2nd joint shorter than 3^d. Antenna 2 of ♀, penultimate joint elongate. Maxilliped 3, 2nd joint expanded distally, 3^d narrower than 4th. Peraeopod 1, 2nd joint about as long as rest of limb, 6th longer than 5th or 7th. Peraeopod 2, 5th joint much longer than 6th and 7th combined. Exopod on 3^d and 4th limbs of ♀ minute, 2-jointed. Exopod of uropod a little less than half as long as the peduncle, and slightly longer than the endopod, which has the 1st joint equal to 2nd and 3^d combined, or less. spines on medial margin respectively 4, 2, 2. L. ♀ 13.5 mm, ♂ 10.6 mm,

Alaskan area, depth 9—110 m.

5. **D. anderssoni** Zimmer 1907 *D. a.*, Zimmer in: Zool. Anz., v. 31 p. 220 | 1909 *D. a.*, Zimmer in: Ergeb. Schwed. Südpol.-Exp., v. 6 nr. 3 p. 18 t. 6 f. 97—105, t. 7 f. 106—118.

Pseudorostral lobes well produced in front of the eyelobe, which in ♀ but not in ♂ carries a pair of denticles, frontal lobe crossed by 2 ridges in ♀, 1 in ♂, these being followed by 10 more or less encircling ridges, of which the first 1 and the last 2 are less developed than the rest; they are finely denticulate, as is also the upturned hind margin. The upper hind margin of the first 2 pleon segments is finely dentate; the telson almost as long as the 5th pleon segment in ♀, longer in the ♂, with post-anal section much the longer, carrying 8 or 9 pairs of lateral spines in ♀, about 17 in ♂. Eyelobe showing lenses but no pigment. Antenna 1, 1st joint longer than 2nd and 3^d combined. Maxilliped 3, 2nd joint more than twice as long as rest of limb, 3^d much wider than base of 4th. Peraeopod 1, 2nd joint not as long as rest of limb, 5th rather shorter than 6th; 6th much shorter than 7th. Peraeopod 2, 6th joint about $\frac{2}{3}$ ds of 7th, both together about $\frac{2}{3}$ ds of 5th. Exopods of 3^d and 4th pairs minute 2-jointed in ♀, strongly developed in ♂. Setae on medial margin of peduncle in the pleopods clearly modified as retinacula. Peduncle of uropods as long as 5th and 6th pleon segments combined, with about 26 spines on medial margin in ♀, many more in ♂, the rami rather more than a third as long, the exopod a little the shorter

1st joint of endopod the longest, but not equal to 2nd and 3^d combined, spines on its medial margin 13, 8 on each of the others in the ♂, 5, 4, 3, in the ♀. Colour white, with tinge of yellow. L. about 17 mm.

S. Georgia, depth 64—310 m.

6. **D. hammoniae** Zimmer. 1902 *D. h.*, Zimmer in: *Ergeb. Hamburg. Magalh.-Sammeln.*, v. 2 Cumac. p. 6 ff. 8—10.

Pseudorostral lobes slightly upturned, short. Midway between their apex and the small eyeless eyelobe start denticulate ridges diverging at a right angle, then running for a space longitudinally and lastly bending sharply forward; between them are a short feebly denticulate pair of median carinae and outside them a submedian pair of curved folds; near the lower margin runs on each side of the carapace a straight, nearly horizontal, granular line. Pedigerous segments 3 and 4, wider than the 1st and 2nd, and each with a rather deep lateral furrow. Pleon segment 5 the longest, 6th the widest, a little shorter than the telson, the distal section of which has about 12 pairs of lateral setiform spines. Peraeopod 3, 4, without rudimentary exopods. Peduncle of uropods about twice as long as the telson, with some 28 spines on the medial margin; rami rather shorter than the telson, exopod slightly shorter than the endopod, of which the 1st joint is not greatly the longest, spines on the medial margin of the 3 joints respectively 7, 5, 4. Colour clear yellowish white. L. ♀ 20 mm.

S. Atlantic, off Cape Blanco, E. Patagonia, 151 m; lat. 43° 6' S., long. 60° W., 105 m.

7. **D. antillensis** O. Sars 1871 *D. a.*, G. O. Sars in: *Öfv. Ak. Förh.*, v. 28 nr. 6 p. 803 | 1873 *D. a.*, G. O. Sars in: *Svenska Ak. Handl.*, n. ser. v. 11 nr. 5 p. 4 t. 1 f. 1—3.

Form of ♀ unusually slender. Pseudorostral lobes not far produced in front of the elongate oval prominent eyelobe; surface of carapace anterodorsally densely beset with forward pointing spicules, and in the middle obsoletely carinate, with a pair of finely crenulate pleats curving round from the bases of the pseudorostral lobes to the middle of the back. Pedigerous segments 3, 4, rather wider than the rest; pleon segment 5 much the longest, 6th the widest. Telson less than twice as long as the 6th segment, about $\frac{5}{6}$ ths of the peduncle of the uropods, with 5 pairs of lateral spines. Antenna 1, 3^d joint elongate. Peraeopod 1 very long, 6th and 7th joints very long, subequal. Peraeopod 2, 5th joint subequal to 6th and 7th combined. 3^d and 4th pairs without rudimentary exopods. Peduncle of uropods subequal to the endopod, which is slightly longer than the exopod, its 1st joint equal to 2nd and 3^d combined, 3^d much longer than 2nd, spines on the medial margin respectively 6, 2, 4. Integument pellucid. L. 6.5 mm.

W. Indies, Anguilla, depth 377—565 m.

8. **D. koreanus** Calm. 1911 *D. koreana*, Calman in: *Tr. zool. Soc. London*, v. 18 iv p. 342, 382 t. 37 f. 19—25.

Pseudorostral lobes far and acutely produced in front of the minute eyeless eyelobe. Surface of carapace setose with spicules interspersed, lower margin minutely dentate anteriorly, the back with a median depression between the branchial regions. Pedigerous segments moderately setose, hind corners of 5th rounded with a minute terminal spinule. First 5 pleon segments with lateral corners produced and spiniform, and each with pair of small dorso-lateral teeth; telson as long as 5th and 6th segments combined, the shorter post-anal section having about 10 pairs of almost setiform lateral spines.

Antenna 1, 1st and 3^d joints subequal, 2nd shorter than either. Peraeopod 1, 2nd joint shorter than rest of limb, 6th joint longer than 5th, and nearly twice the 7th. Peraeopod 2, 6th and 7th joints together $\frac{2}{3}$ of the 5th. 3^d and 4th pairs without rudimentary exopods. The 3^d to 5th pairs with tubercles produced at lateral end of 4th joint. Peduncle of uropods subequal to telson, with a dozen spinules on the medial margin; exopod curved, shorter than the endopod, which is about half as long as the peduncle, the 1st joint longer than 2nd and 3^d combined, spines on the medial margin respectively 6, 3, 2. L. ♀ 12 mm.

Korea, depth 68 m.

9. **D. algoae** Zimmer 1908 *D. a.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 158, 188 t. 44 f. 96—98; t. 45 f. 99—108 | 1910 *D. a.*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 6 iv p. 418.

General surface finely granular, integument hard, brittle. Pseudorostral lobes produced much in advance of the eyeless eyelobe, horizontal, each acute, apices separated by small emargination; carapace covered with microscopic forward pointing denticles, frontal lobe with pair of longitudinal pit-like depressions. Pedigerous segments 1—4 about as wide as the carapace, 3^d and 4th dorsally distinguished only by suture line, 5th with sides acutely extended along 1st pleon segment; telson much longer than 5th pleon segment with lateral setules on the proximal section, the narrow distal section nearly twice as long with some 16 pairs of lateral spines. Antenna 1, 2nd joint of peduncle the shortest, 2nd joint of principal flagellum the longest. Maxilliped 3, 3^d joint rather wider than 4th. Peraeopod 1 not very long, 2nd joint about as long as rest of limb, 6th joint longer than 5th, 5th than 7th. Peraeopod 2, 5th joint rather longer than 6th and 7th combined. No exopods on the 3^d and 4th pairs of the ♀. Peduncle of uropods longer than the telson, with 21 spines on the medial margin; exopod rather more, endopod a little less, than half the peduncle, 1st joint of endopod equal to 2nd and 3^d combined, spines on the medial margin respectively 6, 4, 3. Colour white. L. ♀ 9 mm.

S. Africa, Algoa-Bay, depth 40—55 m.

10. **D. spinulosus** Heller 1875 *D. spinulosa*, Cam. Heller in: *Denk. Ak. Wien*, v. 35 p. 28 t. 1 f. 5 | 1879 *D. nodosus*, G. O. Sars in: *Arch. Naturv. Kristian.*, v. 4 p. 472 | 1883 *D. spinulosus*, G. O. Sars in: *Forh. Selsk. Christian.*, nr. 18 p. 12, 57 | 1885 *D. nodosa*, G. O. Sars in: *Norske Nordhavs-Exp.*, v. 6 nr. 14 p. 61 t. 7 f. 1—4 | 1886 *D. n.* + *D. spinulosa*, G. O. Sars in: *Norske Nordhavs-Exp.*, v. 6 nr. 15 p. 22; 21 | 1887 *D. s.*, H. J. Hansen in: *Dijmphna Udb.*, p. 241 | 1887 *D. s.*, H. J. Hansen in: *Vid. Meddel.*, v. 39 p. 205 | 1900 *D. s.*, G. O. Sars, *Crust. Norway*, v. 3 p. 55, 56 t. 42 | 1900 *D. s.* + *D. nodosa*, Zimmer in: *Fauna arctica*, v. 1 p. 425, 434 (with synonymy); p. 423, 433 | 1901 *D. s.*, Ohlin in: *Bih. Svenska Ak.*, v. 26 nr. 12 p. 47 t. 6 f. 10a—d.

Pseudorostral lobes well produced in front of eyeless eyelobe, horizontal, acute, sides minutely denticulate; carapace large, with a pair of spines on front of frontal lobe, behind which are two outward curving rows of 4 conspicuous spines, while dorso-laterally large groups of forward pointing spines are very conspicuous. these being nodose instead of sharp and somewhat less numerous in young specimens. Pedigerous segments 1—4 are spiniferous, with a specially conspicuous pair of spines dorsally, the 5th segment having an unpaired median spine. Pleon segments coarsely denticulate, with postero-lateral corners produced outwards; telson longer than the 2 preceding segments combined and than the peduncle of the uropods, with about 8 pairs of lateral spines. Antenna 1, 1st joint longer than 2nd and 3^d combined. Peraeopod 1

of moderate length, 2nd joint spinulose, 5th shorter than 6th, 7th than 5th. Peraeopod 2, 2nd to 4th joints denticulate, 5th subequal to 6th and 7th combined. Exopod of uropod longer than endopod, which is half as long as the peduncle, its 1st joint scarcely equal to 2nd and 3^d combined, spines on the medial margin respectively 4, 2, 3. Colour pale carneous. L. ♀ 22.8 mm.

N. Norway, depth 188 m; Franz Joseph Land; Barents Sea, 226—414 m; Kara Sea, 9—168 m; W. Greenland, 90—377 m; lat. 79° 58' N., 435 m; lat. 81° 14' N., 150 m.

11. *D. armatus* Norm. 1876 *D. armata* (nom. nud.), A. M. Norman in: Jeffreys in: P. R. Soc. London, v. 25 p. 212 | 1879 *D. a.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 64 | 1887 *D. a.*, H. J. Hansen in: Vid. Meddel., v. 39 p. 205 | 1900 *D. a.*, Zimmer in: Fauna arctica, v. 1 p. 420, 434.

Pseudorostral lobes short, but ending acutely, with a pair of conspicuous erect spines, behind each of these a longitudinal curved row of 4 spines, all but the 1st very small, and a single spine between each row and the serrate antero-inferior margin, the surface of the carapace otherwise glabrous, with sparse shallow pittings. Pedigerous segments together scarcely half as long as the carapace, smooth, except that the side-plates of the 5th are armed with a spine, but not produced backward. Pleon segments smooth, telson longer than the peduncle of the uropods, its proximal section longer than the preceding segment, lateral spines 3 small pairs, apical spines long. Antenna 1, with the 3 joints of the peduncle subequal. Peraeopod 1, 2nd joint strongly spinose. Exopod of uropods rather longer than the endopod, the medial margin of which has on its 3 joints respectively 2, 2, 1 spines. L. ♀ 10 mm.

Entrance of Davis Strait, lat. 59° 10' N., long. 50° 25' W., depth 3295 m.

12. *D. bispinosus* (Stimps.) 1853 *Cuma bispinosa*, Stimpson in: Smithson. Contr., v. 6 nr. 5 p. 39 | 1871 *Diastylis quadrispinosa*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 1 p. 72 | 1871 *D. q.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 28 t. 10 f. 50—52, t. 11 f. 53—61 | 1873 *D. quadrispinosa*, S. I. Smith in: A. E. Verrill in: Rep. U. S. Fish. Comm., v. 1 p. 507, 554 t. 3 f. 13 | 1874 *D. q.*, S. I. Smith in: Tr. Connect. Ac., v. 51 p. 28 | 1879 *D. quadrispinosus*, S. I. Smith in: Tr. Connect. Ac., v. 51 p. 112 | 1883 *D. bispinosus*, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 57 | 1900 *D. bispinosa* G. O. Sars, Crust. Norway, v. 3 p. 47 | 1900 *D. b.*, Zimmer in: Fauna arctica, v. 1 p. 421, 434 | 1912 *D. quadrispinosa*, Calman in: P. U. S. Mus., v. 41 p. 605, 658.

Pseudorostral lobes well produced, horizontal, acute. Carapace large, with finely serrate anterior half of lower margin, a pair of conspicuous forward pointing teeth, nodose in the ♂, followed by a much smaller pair, flanking the frontal lobes, and the back especially on the branchial regions beset with spicules and short hairs, the hind margin raised. Pedigerous segments smooth, 5th with front margin crenulate, and small median tooth behind, postero-lateral corners more produced in ♂ than in ♀. Pleon segments 1 and 5 each with a pair of postero-dorsal teeth, a median serrate ridge on 2nd to 5th in the ♂ and a pair of dorso-lateral ridges; telson shorter than peduncle of uropods (Sars) or a little longer than it (in ♂, Calman), with 12—14 pairs of lateral spines. Eye distinct. Antenna 1, 3^d joint longer than 2nd, 1st equal to both combined. Maxilliped 1, with branchial leaflets in spiral arrangement. Peraeopod 1, 2nd joint shorter than rest of limb, 7th shorter than 5th, 5th than 6th. Peraeopod 2, 2nd joint with strong spine at apex, 3^d with 2 such spines, 5th shorter than 6th and 7th joints combined. The many-spined peduncle of uropods rather less than twice the exopod, rather more than twice the endopod, in which the 1st joint is rather less than the

2nd and 3^d combined, spines on the 3 joints respectively 6, 5, 3 (Sars), for 2nd joint 3 or rarely 4 (Smith). Colour pale carneous, with reddish purple patch on carapace, and 2 small spots of pink. L. ♀ nearly 11 mm.

N. America, from Gulf of St. Lawrence to lat. 35° 42' N., near Cape Hatteras, depth 4—373 m.

13. **D. cornutus** (Boeck) 1859 *D. bispinosa*, Danielssen (non Stimpson, 1853) in: Norske Selsk. Skr. 19. Aarh., v. 4 II p. 108 | 1864 *Cuma cornuta*, A. Boeck in: Forh. Selsk. Christian., 1863 p. 190 | 1865 *Diastylis bicornis*, Bate in: Ann. nat. Hist., ser. 3 v. 15 p. 84 t. 1 f. 2 | 1865 *D. bispinosa*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 164 | 1865 *D. cornuta*, Bate in: Zool. Rec., 1864 v. 1 p. 287 | 1866 *D. bispinosus*, Bate in: Zool. Rec., 1865 v. 2 p. 326 | 1879 *D. cornuta*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 55 | 1883 *D. cornutus*, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 12, 58 | 1894 *D. c.*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 276 | 1900 *D. cornuta*, G. O. Sars, Crust. Norway, v. 3 p. 45 t. 35, 36 | 1900 *D. c.*, Zimmer in: Fauna arctica, v. 1 p. 421, 434 | 1909 *D. c.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 II p. 31.

Nearly allied to *D. bispinosus*, but pseudorostral lobes less produced, the antero-lateral corners distinct, though obtusely angled; the two pairs of



Fig. 55.
D. cornutus (♂) (Boeck),
branchiae (after Sars).



Fig. 56.
D. cornutus (Boeck),
pleopod 1 (after Sars).



Fig. 57.
D. cornutus (Boeck),
pleopod 2 (after Sars).

teeth which flank the frontal lobe of the carapace are in the ♀ more conspicuous, and are followed by 2 meandering rows of small unequal denticles; in the ♂ the pseudorostral lobes are minutely serrate at each side, the antero-lateral corners produced as rounded dentate lobes close to the eye, an obliquely transverse fold in the front part of the carapace on each side joins the serrate lateral carina which runs to the hind margin, the carapace being otherwise almost smooth. Pedigerous segments with spinules dorsally in double row in ♀, not in ♂, 5th segment in ♀ with a median spinule on the hind margin, the postero-lateral angles acute, less produced in ♀ than in ♂. Pleon clothed with spinules. Telson shorter than peduncle of uropods, with 8—10 pairs of lateral spines. Eye small, imperfectly developed. Antenna 1, 3^d joint longer than 2nd, 1st not equal to 2nd and 3^d combined, margin denticulate. Peraeopod 1, with 5th joint nearly, 6th more

than, twice as long as 7th. Peraeopod 2, 5th joint longer than 6th and 7th combined. Endopod of uropods in ♀ with spines on the 3 joints respectively 6, 2, 2, in ♂ 16, 7, 7; terminal spine in ♀ continuous with the apical joint. Colour greyish white, in ♀ tinged with yellow. L. ♀ 12 mm, ♂ 14 mm.

Coast of Norway, Kattegat, British Isles, coast of France, at various depths between 27 and 549 m, but in lat. 55° 40' N., long. 12° 46' W., at 2700 m.

14. *D. laevis* Norm. 1869 *D. l.*, A. M. Norman in: Rep. Brit. Ass., v. 38 p. 270 | 1871 *D. tumida*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 5 | 1877 *D. laevis*, Meinert in: Naturh. Tidsskr., ser. 3 v. 11 p. 176 | 1879 *D. l.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 60 | 1883 *D. l.*, *D. rostrata*?, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 57, 58 | 1897 *D. l.*, Ehrenbaum in: Wiss. Meeresunters., v. 21 p. 416 | 1900 *D. rostrata*, G. O. Sars (non Goodsir 1843), Crust. Norway, v. 3 p. 51 t. 39 | 1906 *D. laevis*, A. M. Norman & T. Scott, Crust. Devon Cornwall, p. 31 | 1909 *D. l.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 311 p. 32.

Near to *D. tumidus* (nr. 25) and *D. rathkii* (nr. 16). Pseudorostral lobes well produced, horizontal, ending acutely, antero-lateral corners rounded, serrate. Carapace of ♀ smooth, with scattered hairs, in ♂ with smooth longitudinal carina on each side, crossed in front by an obliquely transverse fold. Pedigerous segments also smooth, except for serrate front margin of 5th segment, of which the postero-lateral corners are acute, more produced in ♂ than in ♀. Pleon segments spinulose only in ♂; telson nearly equal to the 2 preceding segments combined, its distal portion much the longer, with 11—17 pairs of lateral spines. Eye well developed. Antenna 1, 3^d joint nearly as long as first, longer than the 2nd. Peraeopod 1, 2nd joint densely fringed with plumose setae on both margins with spines on surface between them; 5th joint about as much longer than 7th as it is shorter than 6th. Peraeopod 2, 5th joint subequal to 6th and 7th combined; 3^d and 4th pairs with 2nd joint not denticulate. Peduncle of uropods longer than the telson, with as many as 23 spines on the medial margin; exopod longer than endopod, which is about half as long as the peduncle, with 7 or 8, 3 or 4, 2 or 3 spines respectively on the medial margin of its 3 joints, the 1st longer than 2nd and 3^d combined. Colour greyish white. L. 10—11 mm.

S. coast of Norway, Danish, French, British waters, depth 9—37 m, and between lat. 52° 25' and 54° 15' N. in depths between 165 and 2980 m.

15. *D. sulcatus* Calm. 1912 *D. sulcata*, Calman in: P. U. S. Mus., v. 41 p. 605, 654 ff. 76—78.

Near to *D. rathkii* (nr. 16), but distinguished by sculpture and more elongate form of the carapace. Pseudorostral lobes horizontal, acute; lower margin of carapace anteriorly serrate; just behind the small eyeless eyelobe a carina, there dentate, crosses the carapace and diverges downwards and backwards, becoming denticulate below but not reaching the hind margin; sideplates of 2nd pedigerous segment narrowly rounded in front, lateral expansions of 3^d and 4th more strongly produced backwards than in *D. rathkii*, postero-lateral angles of 5th acutely produced. Pleon segment 5 slightly longer than the 6th, telson about $\frac{1}{3}$ ^d longer, its distal section long, narrow, with about 7 pairs of lateral spinules. Antenna 1, 1st joint nearly thrice as long as 2nd, and twice the 3^d. Joints of antenna 2 short. Peraeopod 1, 2nd joint much

longer than rest of limb, joints 5—7 subequal. Peraeopod 2, 3^d joint with conspicuous spine on medial margin, 5th longer than 6th and 7th combined. 3^d and 4th pairs without exopods; but as in *Diastylopsis* (p. 109) 3^d pair distant from 2nd, its 5th joint as broad as the 4th, only a little longer than broad. Peduncle of uropods scarcely longer than the telson; exopod less than $\frac{2}{3}$ ds, endopod about half as long, with 1st joint longer than 2nd and 3^d combined, spines of medial margin respectively 5, 3, 3. L. ♀ 13 mm, adult ♂ unknown.

Alaska, lat. 63° 37' N., long. 165° 10' W., 22 m.

16. **D. rathkii** (Kröyer) 1841 *Cuma r.*, Kröyer in: Naturh. Tidsskr., v. 3 vi p. 513, 531 t. 5 f. 19—22; t. 6 f. 17, 18, 23—30 | 1843 *Alauna rostrata*, Goodsir in: Edinb. new phil. J., v. 34 p. 121, 127 t. 4 f. 1—10 | 1846 *Cuma rathkii* + *C. angulata* ♂, Kröyer in: Naturh. Tidsskr., ser. 2 v. 2 ii p. 144, 207 t. 1 f. 4, 6; p. 156, 206 t. 2 f. 1a—i | 1849 *C. r.* + *C. a.*, Kröyer in: Voy. Nord Crust., t. 5 f. 1; t. 5 f. 2 | 1852 *C. rathkei*, W. Liljeborg in: Öfv. Ak. Förh., v. 9 p. 6 | 1856 *Diastylis rathkii*, Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 451 (3) t. 13 | 1867 *Alauna goodsiri* (non Bell), A. S. Packard in: Mem. Boston Soc., v. 1 ii p. 301 | 1869 *Diastylis spinosa* ♂, A. M. Norman in: Rep. Brit. Ass., v. 38 p. 271 | 1873 *D. rathkei*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 6 p. 7, *D. rathkii*, t. 3 f. 8, 9 | 1873 *D. orbigny* (?), Latreille MS. in: P. Fischer in: Act. Soc. Linn. Bordeaux, ser. 3 v. 8 v p. 425 | 1878 *D. bimarginatus* ♂, Bate in: Ann. nat. Hist., ser. 5 v. 1 p. 409 | 1878 *D. b.*, Sim in: Ann. nat. Hist., ser. 5 v. 2 p. 453 | 1879 *D. b.*, Bate in: Ann. nat. Hist., ser. 5 v. 3 p. 93 | 1879 *D. rathkii*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 54 | 1880 *D. Rathkei*, Stuxberg in: Bih. Svenska Ak., v. 5 nr. 22 p. 35 (distribution, numbers) | 1883 *Cuma rathkii*, Burmeister, Beitr. Cuma, p. 1 t. 1, 2 | 1885 *C. r.*, H. Blanc in: Recu. zool. Suisse, v. 2 p. 253 t. 10 (development of egg) | 1900 *Diastylis rathkei*, G. O. Sars in: Crust. Norway, v. 3 p. 44 t. 33, 34, *D. r.* var. ♂, p. 107 t. 70—72 | 1900 *D. rathkii*, Zimmer in: Fauna arctica, v. 1 p. 423 (with extensive synonymy), 434, *D. r.* var. *glabra*, Zimmer, p. 425 | 1901 *D. r.*, Ohlin in: Bih. Svenska Ak., v. 26 nr. 12 p. 46 | 1902 *D. r.* var. *sarsi*, A. M. Norman in: Ann. nat. Hist., ser. 7 v. 10 p. 478 | 1906 *D. rathkei*, A. M. Norman & T. Scott, Crust. Devon Cornwall, p. 30 | 1909 *D. r.*, Stappers in: Cellule, v. 25 ii p. 351, 358 t. 1 f. 9; t. 2 f. 1—18 (le tube digestif) | 1909 *D. r.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., n. ser. 2 v. 3 ii p. 29 | 1911 *D. rathkii*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 110 (distribution) | 1912 *D. r.*, Calman in: P. U. S. Mus., v. 41 p. 605, 652.

Variable with the variations ill defined. ♀. Body slender. Pseudorostral lobes horizontal, conical, antero-lateral corners distinct or almost obsolete, serrate; frontal lobe of carapace with double row of forward pointing denticles down the middle, sometimes crossed by 1, 2 or 3 imperfect transverse rows, and flanked by scattered denticles, sometimes few, sometimes very numerous. Pedigerous segment 5 serrate in front, postero-lateral angles acute, strongly produced straight backwards or slightly divergent. Pleon segments simple, smooth, telson shorter than peduncle of the uropods but reaching its end or equal to it, the narrow section elongate with about 15 or fewer pairs of lateral spinules, the apical pair short. Eye small, distinct. Antenna 1, 1st joint with or without small apical tooth, longer than 3^d, 3^d than 2nd. Antenna 2, the joints short, successively shorter. Peraeopod 1, 2nd joint scarcely longer than rest of limb, with denticles on side of distal part, joints 5—7 subequal. Peraeopod 2, 7th joint much or not much longer than 6th, 5th much longer than both combined. 3^d and 4th pairs stout, setose, without exopods. Exopod of uropods about half as long as the peduncle, longer than the endopod, of which the 1st joint is longer than the other 2 combined, spines of the medial margin respectively 6, 3, 2 or 3. Colour whitish with carneous tinge. L. 17 mm.

♂. Frontal lobe and adjacent parts of carapace without denticles, except at commencement of the denticulate carina which on each side curves to run round subparallel to the lower margin. First 5 pleon segments with longitudinal rows of denticles, telson geniculate, with 12—16 pairs of slender lateral spines. Endopod of uropods with 11, 5, 3 spines on the 3 joints respectively. L. 12.5—22 mm.

Coasts of N. Europe, West Greenland and Labrador, Atlantic coast S. of Labrador, Alaskan area and Pacific coast north of Puget Sound; between lat. 81° and 50° 10' N., and in depths between 9 and 1222 m.

17. *D. bradyi* Norm. ? 1844 *Alauna rostrata*, W. Thompson in: Ann. nat. Hist., v. 13 p. 435 | ? 1856 *A. r.*, W. Thompson, Nat. Hist. Ireland, v. 4 p. 392 | 1879 *Diastylis bradyi*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 59 | 1888 *D. b.*, A. O. Walker in: P. Liverp. biol. Soc., v. 2 p. 178 t. 13 f. 10, 11 | 1906 *D. bradii*, A. M. Norman & T. Scott, Crust. Devon Cornwall, p. 32 | 1909 *D. b.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 II p. 30 t. 8, 9.

Near to *D. rathkii*, but having the carapace of the ♀ mapped into areas by lines of small denticles, chiefly transverse; the front margin of the anterior pedigerous segments minutely crenulate; the pleon segments, including the 6th, having a series of small spines on the lower lateral margin; peraeopods with the 2nd joint, especially in the 1st pair, strongly spinose, 1st joint of exopods also spinose; 7th joint of 2nd pair (as figured) even shorter than the 6th; endopod of uropods with 9—11, 3 or 4, 3—6 spines on the 3 joints respectively. L. 11—12 mm.

Lough Swilley, county Donegal, Ireland, 27 m; round England, in shallow water to 5 m.

18. *D. goodsiri* (Bell) 1855 *Alauna g.*, T. Bell in: Belcher, Last arct. Voy., v. 2 p. 403 t. 34 f. 2, 2a—q (not f. 3) | 1859 *A. plumosa*, M. Sars in: Forh. Selsk. Christian., 1858 p. 127 | 1861 *Cuma gigantea*, Danielssen in: Nyt Mag. Naturv., v. 11 p. 7 | 1871 *Diastylis goodsiri*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 5 | 1880 *D. g.*, Stuxberg in: Bih. Svenska Ak., v. 5 nr. 22 p. 21, 22, 24, 51, 52, 53, 59 | 1887 *D. g.*, H. J. Hansen in: Dijnphna Udb., p. 241 t. 22 f. 5—5n; t. 23 f. 1—1e (detailed description) | 1900 *D. g.*, G. O. Sars, Crust. Norway, v. 3 p. 54 t. 41 | 1900 *D. g.*, Zimmer in: Fauna arctica, v. 1 p. 422 (with synonymy), 434 | 1911 *D. g.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 383 | 1912 *D. g.*, Calman in: P. U. S. Mus., v. 41 p. 605, 662.

Body robust, hirsute. Pseudorostral lobes produced, conical, horizontal, antero-lateral corners obsolete. Carapace inflated, surface without denticles (Sars), with plenty (H. J. Hansen, Calman), with several furrows varying in the 2 sexes. Pedigerous segments furrowed down the middle in the ♂, 3^d and 4th in ♀ dorsally coalesced, postero-lateral angles of the 5th acute, more produced in ♂ than in ♀. Pleon segments 1—5 with postero-lateral corners acute, produced backwards and strongly outwards, and in the ♂ these segments have medio-dorsal and lateral rows of denticles; telson in ♀ as long as the 2 preceding segments combined, in ♂ a little longer, with 20 pairs of lateral setiform spinules. Eyelobe small, eye not perceived. Antenna 1, 1st joint longer than 2nd and 3^d combined, 2nd longer than 3^d, principal flagellum 4-jointed, accessory small, 3-jointed. Antenna 2 of ♂ with very long flagellum. Peraeopod 1 not very long, the plumose 2nd joint nearly as long as rest of limb, the last 3 joints not very unequal. Peraeopod 2, 2nd joint denticulate, 5th longer than 6th and 7th combined, 7th as figured not longer than 6th. 3^d

and 4th pairs stoutly built, without exopods in ♀. Peduncle of uropods longer than the telson, exopod scarcely half as long as the peduncle, very little longer than the endopod, of which the 1st joint is nearly double the 2nd and 3^d combined, with 9 spines on the medial margin, the 2nd having 2, the 3^d none and its apical spine not separate from the joint. Colour whitish. L. 25—35 mm.

Coasts of N. Europe, Atlantic coast S. of Labrador, Polar Islands of N. America, Greenland, Jan Mayen, Spitzbergen, Barents Sea, Kara Sea, Siberian Polar Sea, southward reaching lat. 44° 05' 30" N., long. 63° 31' 30" W., depths 2—377 m.

19. *D. stygius* O. Sars 1871 *D. stygia*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 6 p. 798 | 1873 *D. s.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 6 p. 6 t. 2 f. 4—7 | 1879 *D. s.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 57, 58 | 1886 *D. s.*, G. O. Sars in: Norske Nordhavs-Exp., v. 6 nr. 15 p. 22 | 1887 *D. s.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 44 t. 6—8 | 1900 *D. s.*, Zimmer in: Fauna arctica, v. 1 p. 425, 434 | 1901 *D. polaris*, Ohlin in: Bih. Svenska Ak., v. 26 nr. 12 p. 50 | 1912 *D. stygia*, Calman in: P. U. S. Mus., v. 41 p. 605, 661.

Very near to *D. polaris* (nr. 20). Pseudorostral lobes conically produced, horizontal, antero-lateral corners obsolete; carapace with lower margin serrate anteriorly, surface in ♀ beset with small spinules, densest in front, but only scantily represented in the ♂, which on the other hand has a pair of anterior lobes with serrate edges and a lateral keel low down on each branchial region. Pedigerous segments 1—3 and 5 have the front margin finely denticulate, 2—4 in the ♀ are firmly connected, 1—3 have a medio-ventral ridge, postero-lateral angles of the 5th acutely produced and carrying 4 plumose setae in the ♂, but not acute in the ♀, which has 2 small dorsal denticles, while in the ♂ it has a ventral serrate crest, which is continued on the first 2 pleon segments, pleon segments 1—6 otherwise smooth in both sexes, or 1st in ♀ with a ventral spine (A. M. Norman); telson about twice as long as 6th pleon segment with 9 pairs of lateral spinules in ♀, thrice as long, with 15 pairs of spinules in the ♂. Eyelobe small, eye wanting. Antenna 1 ♀, 1st joint much longer than 2nd and 3^d combined, 2nd a little shorter than 3^d. Antenna 2 ♂, flagellum very long. Peraeopod 1, 2nd joint spinose and setose, not so long as rest of limb, 5th to 7th joints subequal. Peraeopod 2, 3^d joint with a strong denticle, 4th with 2 such denticles, 7th joint a little longer than 6th, 5th much longer than both combined. 3^d and 4th pairs without exopods in the ♀. Peduncle of uropods rather longer than the telson, not quite twice as long as the subequal rami; 1st joint of endopod longer than the 2nd and 3^d combined, spines on the 3 joints respectively 8, 4, 3 in ♀, 13, 9, 5 in ♂. L. ♀ 16 mm, ♂ 21 mm.

Atlantic coast of N. America south of Labrador, depth at a single station 267 m, otherwise only at depths varying between 1134 and 4896 m (or at most 3200, Ohlin).

20. *D. polaris* O. Sars 1871 *D. p.*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 6 p. 797 | 1873 *D. p.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 6 p. 4 t. 1 f. 1—3 | 1879 *D. p.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 56 | 1886 *D. p.*, G. O. Sars in: Norske Nordhavs-Exp., v. 6 nr. 15 p. 22 | 1900 *D. p.*, Zimmer in: Fauna arctica, v. 1 p. 423, 434 | 1901 *D. p.*, Ohlin in: Bih. Svenska Ak., v. 26 nr. 12 p. 50.

Pseudorostral lobes shortly conical, horizontal, antero-lateral corners obsolete; dorsal line of carapace nearly straight, surface beset with very small forward pointing denticles, sides having 1 or 3 (G. O. Sars) or 2 (A. M. Norman) very indistinct obliquely transverse pleats or wrinkles, lateral margin

serrate anteriorly, hind margin raised. Pedigerous segments all free, 1, 2, and 5 with crenulate front margin, postero-lateral corners of the 5th bluntly rounded. Pleon segments 1—6 without denticles, with short hairs, telson narrow, twice as long as the 6th segment, with 10 or 11 pairs of lateral spinules. Eyelobe very small, eye wanting. Antenna 1 with elongate peduncle. Peraeopod 1, 2nd joint not as long as rest of limb, last 3 joints subequal. Peraeopod 2, 7th joint longer than 6th, 5th subequal to both combined. Peduncle of uropod very little longer than the telson, less than twice the exopod, rather more than twice the endopod, of which the 1st joint equals the 2nd and 3^d combined, with 5 or 6, 2 or 3, 3 spines on the medial margin of the joints respectively. L. ♀ 8—12 mm, ♂ 12 mm (Ohlin, who unites *D. stygius* with this species).

Lat. 60° 31' N., long. 9° 18 W., depth 419 m; NW. of Spitzbergen, depth 1789 m; cold area between Iceland and N. Norway, depth. 2510 m.

21. *D. lucifer* (Krøyer) 1841 *Cuma lucifera*, Krøyer in: Naturh. Tidsskr., v. 3 vi p. 527, 531 t. 6 f. 34, 35 | 1846 *C. l.*, Krøyer in: Naturh. Tidsskr., ser. 2 v. 2 ii p. 171, 207 | 1849 *C. l.*, Krøyer in: Voy. Nord Crust., t. 3 a—k | 1859 *Diastylis l.*, Danielssen in: Norske Selsk. Skr. 19. Aarh., v. 4 ii p. 108 | 1865 *D. borealis*, Bate in: Ann. nat. Hist., ser. 3 v. 15 p. 85 t. 1 f. 3 | 1871 *D. lucifera*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 5 | 1879 *D. luciferus*, S. I. Smith in: Tr. Connect. Ac., v. 5 i p. 112 | 1894 *D. lucifer*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 276 | 1900 *D. lucifera*, G. O. Sars, Crust. Norway, v. 3 p. 49 t. 38 | 1900 *D. l.*, Zimmer in: Fauna arctica, v. 1 p. 422 (with synonymy), 434 | 1906 *D. l.*, A. M. Norman & T. Scott, Crust. Devon Cornwall, p. 32 | 1909 *D. l.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 ii p. 32 | 1912 *D. l.*, Calman in: P. U. S. Mus., v. 41 p. 605, 662.

Pseudorostral lobes conical, horizontal, antero-lateral corners almost obsolete; carapace of ♀ with denticles in transverse rows on the frontal lobe and less densely to the rear, in the ♂ only 3 denticles, 2 flanking the frontal lobe, 1 as in the ♀ on the eyelobe. Pedigerous segment 5 with postero-lateral angles acutely produced only in the ♂. Pleon segments 1—6 unarmed, telson in ♀ twice as long as the 6th segment with 3 or 4 pairs of lateral spines, longer and narrower in the ♂. Eye small but distinct. Antenna 1, 3^d joint a little shorter than 1st, longer than 2nd. Peraeopod 1, 2nd joint not as long as rest of limb, last 3 joints subequal. Peraeopod 2, 5th joint little longer than 7th, which is decidedly longer than 6th. 3^d and 4th pairs with 2nd joint not denticulate, without exopods in ♀. Peduncle of uropods longer than the rami, exopod shorter than telson in ♀, subequal to it in ♂, in both sexes longer than the endopod, of which the 1st joint is not much longer than the 2nd, spines on medial margin of its joints respectively 3, 2, 2 in ♀, 9, 7, 6 in ♂. Colour greyish white with olive tinge in ♀, whitish semipellucid in ♂. L. scarcely 6 mm ♀, 8 mm ♂.

Coasts of N. Europe, Atlantic coast of N. America S. of Labrador; depths from 15—388 m.

22. *D. rugosoides* A. Walker 1896 *D. r.*, A. O. Walker in: Rep. Brit. Ass., v. 66 p. 459, and in: Herdman in: P. Liverp. biol. Soc., v. 10 Tr. p. 45.

Very near *D. rugosus* (nr. 24), but distinguished by not having the vertical pleat on the carapace, and by strong dorso-lateral teeth on pleon segments 1—3.

Ireland, 6 miles off Galley Head, county Cork.

23. *D. scorpioides* (Lepech.) 1780 *Oniscus s.*, Lepechin in: Acta Ac. Petrop., 1778 v.1 p. 248 t. 8 f. 2 | 1841 *Cuma edwardsii*, Kröyer in: Naturh. Tidsskr., v. 3 vi p. 504, 531 t. 5 f. 1—16 | 1846 *C. e.* + *C. brevirostris* ♂, Kröyer in: Naturh. Tidsskr., ser. 2 v. 2 ii p. 128, 207 t. 1 f. 1, 3, 5, 9—14; p. 174, 208 t. 2 f. 6 | 1849 *C. e.* + *C. b.*, Kröyer in: Voy. Nord Crust., t. 4; t. 5 A f. a—t | 1871 *Diastylis e.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 5 | 1879 *D. e.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 61 | 1880 *D. scorpioides*, Stuxberg in: Bih. Svenska Ak., v. 5 nr. 22 p. 21, 22, 52 | 1900 *D. s.*, G. O. Sars, Crust. Norway, v. 3 p. 58 t. 44 | 1900 *D. s.*, Zimmer in: Fauna arctica, v. 1 p. 424 (with synonymy), 433 | 1901 *D. edwardsii*, Ohlin in: Bih. Svenska Ak., v. 26 nr. 12 p. 52 | 1911 *D. scorpioides*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 112 t. 4 f. 2—6, 11, 12 | 1912 *D. s.*, Calman in: P. U. S. Mus., v. 41 p. 605, 634.

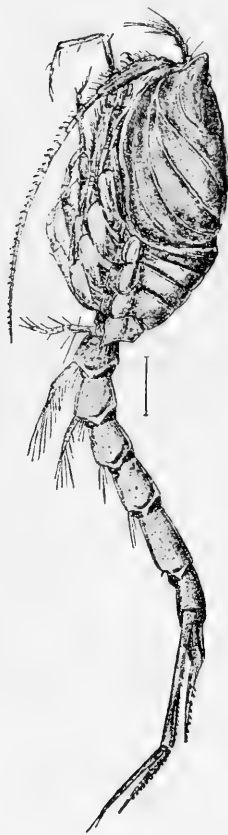


Fig. 58.
D. scorpioides (♂) (Lepechin)
(after Sars).

Pseudorostral lobes not greatly produced, conical, horizontal, shorter and more obtuse in ♂ than in ♀, antero-lateral corners faintly marked; carapace sculptured with 5 pairs of crenulate oblique transverse pleats or ridges, and the hind margin also raised and crenulate, pedigerous segments with front margin more or less distinctly raised and crenulate, postero-lateral corners of 5th obtuse in ♀, somewhat acutely produced in ♂. The non-ovigerous ♀ having medio-ventral processes (hyposphenes of Gilson) on segments 2—4, and a dorsal tooth on the 5th (Stappers), pleon segments 1—6 unarmed, telson shorter than peduncle of uropods, with about 8 pairs of lateral spinules. Eye distinct. Antenna 1, 1st joint subequal to 2nd and 3^d combined. Antenna 2 of ♂, flagellum much shorter than usual in this genus. Peraeopod 1, 2nd joint shorter than rest of limb, plumose, distally spinulose, 7th joint shorter than 5th or 6th. Peraeopod 2, 5th joint decidedly longer than 6th and 7th combined, 7th longer than 6th. 3^d and 4th pairs without exopods in the ♀. Exopod of uropods about half as long as the peduncle, endopod considerably shorter, its 1st joint a little longer than 2nd and 3^d combined, spines on medial margin of the joints respectively, 4—7, 2 or 3, 2 in ♀, 7 or 8, 4, 3 or 4 in ♂. Colour reddish brown. L. ♀ 10—20, ♂ 11—13 mm.

West Greenland and Labrador, Atlantic coast of N. America South of Labrador, off Newfoundland, lat. 47° 40' N., long. 47° 35' 30" W., depth 377 m, but in Franz Joseph Fjord, lat. 78° 6' N., long. 27° 17' W., depths between 3—9 m.

24. *D. rugosus* O. Sars 1865 *D. rugosa*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 166 | 1866 *D. r.*, G. O. Sars in: Nyt Mag. Naturv., v. 15 p. 104 | 1869 *D. r.*, G. O. Sars in: Nyt Mag. Naturv., v. 16 p. 342 | 1872 *D. r.*, G. O. Sars in: Forh. Selsk. Christian., 1871 p. 269 | 1879 *D. strigata* ♂, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 62 | 1879 *D. rugosa*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 46 t. 34—38 | 1883 *D. rugosus*, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 12 | 1894 *D. r.*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 277 | 1897 *D. rugosa*, Ehrenbaum in: Wiss. Meeresunters., v. 21 p. 416 | 1900 *D. r.*, G. O. Sars, Crust. Norway, v. 3 p. 48 t. 37 | 1905 *D. r.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 45 | 1906 *D. r.*, A. M.

Norman & T. Scott, Crust. Devon Cornwall, p. 32 | 1909 *D. r.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 311 p. 32.

Pseudorostral lobes conically produced, horizontal, antero-lateral corners slightly marked in ♀, rounded and serrate in ♂; carapace of ♀ with 5 pairs of transverse pleats, some rather indistinct and discontinuous, the frontal lobe flanked by a conspicuous pair of forward pointing teeth and having to the rear a smaller more approximate pair; carapace of ♂ with 2 pairs of distinct transverse pleats flanking the frontal lobe, the longitudinal lateral carinae quite smooth. Pedigerous segment 5 with front margin crenulate, postero-lateral angles in ♀ blunt, acutely produced in ♂. Pleon segments 1—6 smooth in ♀, in the ♂ 1st with ventral crest of 3 spines, 1st and 2nd each with pair of postero-dorsal denticles. 3^d to 6th with postero-dorsal denticulate keel and a pair of similar latero-ventral keels; telson considerably shorter than peduncle of uropods, with 6—9 pairs of lateral spinules. Eye purple under white, with 3 lenses, larger in ♂ than in ♀. Antenna 1 ♀ long, 3^d joint longer than 1st, 1st longer than 2nd, flagella well developed. Antenna 2 ♀, all the joints small, flagellum in ♂ very elongate. Peraeopod 1, 2nd joint shorter than rest of limb, 6th longer than 5th, more than twice as long as 7th. Peraeopod 2, 5th joint longer than 6th and 7th combined, 7th longer than 6th. 3^d and 4th pairs without exopods in ♀. Exopod of uropods shorter than the telson, more than half as long as the peduncle, endopod in ♀ less than half the peduncle, nearly half in ♂, with 6, 3, 3 spines on medial margin of the joints respectively in ♀, 16, 8, 5, or more in ♂, 1st joint in both sexes subequal to 2nd and 3^d combined. Colour grey-white. L. ♀ 8 mm, ♂ 9 mm.

From Norway, Trondhjem Fjord, round to Messina in the Mediterranean, depths surface to 73 m.

25. *D. tumidus* (Lilj.) 1855 *Cuma tumida*, W. Liljeborg in: Öfv. Ak. Förh., v. 12 p. 119 | 1859 *Diastylis t.*, Danielssen in: Norske Selsk. Skr. 19. Aarh., v. 411 p. 108 | 1872 *D. t.*, G. O. Sars in: Forh. Selsk. Christian., 1871 p. 269 | 1883 *D. tumidus*, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 12 | 1894 *D. t.*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 276 | 1900 *D. tumida*, G. O. Sars, Crust. Norway, v. 3 p. 52 t. 40 | 1900 *D. t.*, Zimmer in: Fauna arctica, v. 1 p. 425 (with synonymy), 434 | 1909 *D. t.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 311 p. 32 | 1912 *D. t.*, Calman in: P. U. S. Mus., v. 41 p. 605.

Pseudorostral lobes not strongly produced, slightly upturned, antero-lateral corners fairly marked, denticulate. Carapace tumid, in ♀ nearly as broad as long, smooth, in ♂ with slight longitudinal keel low down on each side; pedigerous segment 5 with postero-lateral corners obtuse in ♀, acutely produced in ♂; pleon segments 1—6 unarmed in ♀, with scattered denticles in ♂; telson shorter than the peduncle of the uropods, the distal half armed with about 9 pairs of lateral spinules rather smaller than the apical pair. Eye prominent, showing in ♂ 5 lenses. Antenna 1 ♀, 1st joint shorter than 2nd and 3^d combined, 3^d rather longer than 2nd. Antenna 2 ♂, flagellum very long. Peraeopod 1, 2nd joint shorter than rest of limb, 5th shorter than 6th, 7th scarcely half as long as 6th. Peraeopod 2, with 2 short teeth on 3^d joint, 5th as long as 6th and 7th combined, 7th considerably longer than 6th. 3^d and 4th pairs in ♀ without exopods. Peduncle of uropods rather less than twice the exopod in ♀, rather more in ♂; exopod rather longer than endopod exclusive of the coalesced apical spine, spines on medial

margin of endopod's 3 joints respectively 7, 3, 2, 1st joint subequal to 2nd and 3^d combined. Colour whitish with reddish brown tinge. L. ♀ 9 mm, ♂ 10 mm.

Coasts of N. Europe, from Norway, Lofoten Isles to N. E. England; depths 37 to 942 m.

26. **D. neapolitanus** O. Sars - 1879 *D. neapolitana*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 57 t. 39.

Near to *D. rugosus* (nr. 24), but much smaller and without prominent processes. Pseudorostral lobes rather long, horizontal, conically pointed, antero-lateral corners obsolete. Carapace without prominent ridges or dentate processes, but rough especially to the rear with crowded spinules. Pedigerous segment 5 with front margin not crenulate, postero-lateral angles obtuse; telson rather shorter than peduncle of uropods, with seven pairs of lateral spinules, and a rather larger apical pair. Eye distinct, not very prominent. Exopod of uropods about $\frac{3}{4}$ ^{ths} as long as the peduncle, longer than the endopod, which has 5, 2, 2, spines on medial margin of its joints respectively, the 1st joint equal to 2nd and 3^d combined without the coalesced apical spine. L. ovigerous ♀ 5 mm.

Bay of Naples, depth about 94 m.

27. **D. echinatus** Bate 1865 *D. e.*, Bate in: Ann. nat. Hist., ser. 3 v. 15 p. 81 t. 1 f. 1 | 1866 *D. echinata*, G. O. Sars in: Nyt Mag. Naturv., v. 15 p. 105 | 1869 *D. e.*, G. O. Sars in: Nyt Mag. Naturv., v. 16 p. 343 | 1872 *D. e.*, G. O. Sars in: Forh. Selsk. Christian., 1871 p. 269 | 1879 *D. e.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 56 | 1883 *D. echinatus*, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 12 | 1894 *D. e.*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 276 | 1900 *D. echinata*, G. O. Sars, Crust. Norway, v. 3 p. 57 t. 43 | 1900 *D. e.*, Zimmer in: Fauna arctica, v. 1 p. 421 (synonymy, part.), 434 | 1905 *D. e. juv.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 44.

Pseudorostral lobes of moderate size, conically produced, horizontal, laterally spinulose, antero-lateral corners obsolete in ♀, rounded in ♂, denticulate. Carapace in ♀ tumid, nearly as broad as long, with 3 or 4 conspicuous spines extending forwards on each side to base of pseudorostrum, the sides mapped into polygonal areas by rows of denticles, usually with the angles accentuated by a larger spinule; in the more slender ♂ the armature less pronounced, but with addition as usual of lateral carinae. Pedigerous segments each with dorsal pair of teeth, conspicuous in ♀, postero-lateral angles in segments 3—5 of ♀ dentiform. Pleon segments 1—6 dorsally and laterally and in ♂ also to some extent ventrally denticulate; telson as long as the peduncle of the uropods, with 3 pairs of lateral spinules, and a somewhat larger apical pair. Eye inconspicuous. Antenna 1 of ♀. 1st joint as long as 2nd and 3^d combined, 3^d slightly longer than 2nd. Antenna 2 of ♂, flagellum very elongate. Peraeopod 1, 2nd joint as long as rest of limb, the margins in this and more or less in all the pairs spinulose, the 6th joint a little shorter than the 5th, scarcely longer than the 7th. Peraeopod 2, 3^d joint produced into a conspicuous tooth, 5th much longer than 6th and 7th combined, 7th longer than 6th. 3^d and 4th pairs of ♀ without exopods. Exopod of uropods longer than endopod, which is half as long as the peduncle, with 3, 2, 1 spines on its joints respectively, the 2nd joint longer than the 3^d,

the 1st than both together; in non-ovigerous females the endopod 2-jointed (Calman). Colour whitish. L. ♀ 10 mm, ♂ 11 mm.

¹ N. Norway, Farö Channel, Shetland Isles, off Galway, Ireland; depths between 183 and 1006 m.

28. **D. tricinctus** (Zimmer) 1903 *Leptostylis tricincta*, Zimmer in: Zool. Jahrb., Syst. v. 18 p. 691 ff. CC—EE | 1908 *Diastylis t.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 183.

Pseudorostral lobes not strongly produced, horizontal, antero-lateral corners obsolete. Carapace narrow, encircled by 3 finely denticulate pleats, the foremost curving round the frontal lobe to the rear, the second nearer to the 3^d than the 1st. Pedigerous segment 5 with postero-lateral angles very acutely produced and each surmounted by a row of plumose setae. Pleon segments 1—4 with circle of postero-ventral spines; telson rather longer than 5th pleon segment, about $\frac{2}{3}$ ^{ds} of peduncle of uropods, with 8 pairs of lateral spines and a longer apical pair. Antenna 2, flagellum moderately long. Exopod of uropods slightly shorter than the telson, endopod about half as long as the peduncle, with 7, 6, 13 spines on medial margin of its joints respectively, those on the 3^d joint small, 1st joint rather longer than 3^d 3^d than 2nd. Colour clear brown. L. ♂ about 6 mm, ♀ unknown.

Shinagawa (Japan).

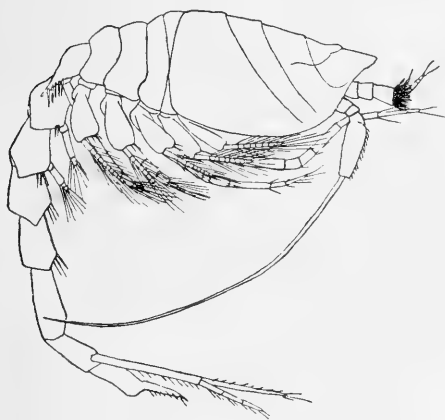


Fig. 59.

D. tricinctus (♂) (Zimmer).

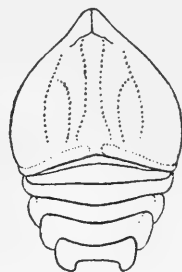


Fig. 60.

D. nucella (♀) Calman,
carapace and pedigerous
segments.

29. **D. nucella** Calm. 1912 *D. n.*, Calman in: P. U. S. Mus., v. 41 p. 605, 645 ff. 62—65.

Pseudorostral lobes short, horizontal, antero-lateral corners almost obsolete. Carapace with height, width, and length subequal, eyelobe wanting, surface granular, dorsally diversified with 3 longitudinal pairs of series of minute square-cut teeth, lower margin in front similarly serrate. Pedigerous segment 5 with postero-lateral corners obtuse. Telson scarcely longer than the preceding segment, half as long as the peduncle of the uropods, with lateral spinules variable, not exceeding 3 on either side, the apical pair longer. Antenna 1, 3^d joint longer than 1st or 2nd. Antenna 2, penultimate joint

not elongate. Maxilliped 3, 2nd joint not expanded or produced distally. Peraeopod 1, 2nd joint much bent, not as long as rest of limb, 5th joint slightly longer than 7th, 6th than 5th. Peraeopod 2, 5th joint subequal to 6th and 7th combined, 7th longer than 6th. 3^d and 4th pairs without exopods. Exopod of uropods a little shorter than the telson, a little longer than the endopod, of which the 1st joint is about twice the 2nd or 3^d, with 3, 1, 1 spines on the medial margin of the joints respectively. L. ♀ 9.5 mm, ♂ unknown.

Cape Smyth, Alaska, depth 5 m.

30. **D. anomalus** Bonnier 1896 *D. anomala*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 555 t. 30 f. 4a—p.

Pseudorostral lobes well produced, each with subapical spinule, antero-lateral corners obsolete. Carapace with height nearly equal to breadth, eyeless eyelobe well developed, surface diversified with numerous denticles small and large, 3 strong ones on the medio-dorsal line, a pair set back on the

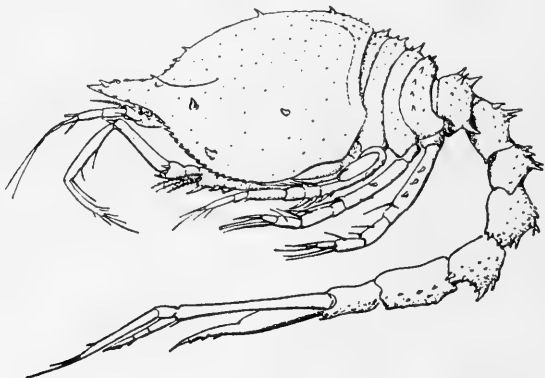


Fig. 61.
D. anomalus (♀) Bonnier.

pseudorostral lobes and 3 other pairs on the sides of the carapace, lower margin with anterior half serrate. Pedigerous segments covered, especially on the medio-dorsal line, with prominent strong spines, the 5th with 3 dorsal, 2 lateral, and 1 medio-ventral. Pleon segments 1—4 also armed with strong spines. 6th with 3 pairs; telson with 3 pairs lateral and a stronger apical pair. Antenna 1 short, both flagella 3-jointed. Antenna 2 of 4 short joints. Maxilliped 3, 2nd joint distally expanded. Peraeopod 1, 2nd joint spinose, much shorter than rest of limb, 5th a little shorter than 6th, a little longer than 7th. Peraeopod 2, 2nd and 3^d joints each armed with 2 strong spines, 7th joint only a little longer than the 6th. 3^d and 4th pairs without exopods. Peraeopod 5 entirely wanting, but this may be a juvenile character (see *Leptostylis mancus* p. 123). Peduncle of uropods rather longer than the telson, rather less than twice the exopod, rather more than twice the endopod, of which the 1st joint is a little longer than the 3^d, the 3^d than the 2nd, with spines on the medial margin respectively 2, 1, 1. L. ♀ juv. scarcely 9 mm.

Bay of Biscay, depth 950 m.

31. **D. asper** Calm. 1912 *D. aspera*, Calman in: P. U. S. Mus., v. 41 p. 605, 617 tf. 66—69.

Pseudorostral lobes moderately long, horizontal, acute, antero-lateral angles barely indicated. Carapace beset with spinules, larger in front, and lining the more or less prominent ridges, of which one pair, nearly horizontal, adjoins the pseudorostral lobes and is met by a curved pair from the lower margins; to these are added an oblique pair and a medio-dorsal longitudinal pair. The eyelobe is broader than long, with obscure corneal areas. Pedigerous segments 1, 2, 5 have the anterior margin finely serrate; postero-lateral corners of the 5th obtuse. Pleon segments 1 and 5 each with a pair of small dorso-lateral teeth. Telson about twice as long as the 6th segment, with about 9 pairs of lateral spinules. Antenna 1, 3^d joint rather longer than 2nd. Maxilliped 3, 2nd joint distally wider than 3^d, but not produced. Peraeopod 1, 2nd joint spinose, not quite so long as rest of limb, 5th joint a little shorter than 6th and longer than 7th. Peraeopod 2, 5th joint subequal to 6th and 7th combined. 3^d and 4th pairs in ♀ without exopods. Peduncle of uropods about as long as the telson in ♀, shorter in young ♂; rami unknown. L. ovigerous ♀ 12.2 mm, ♂ juv. 9 mm; ♀ with rudimentary oostegites, flatter front part of carapace, body plunose, body plunose, 15.6 mm.

Shahafka Cove, Kodiak, Alaska; hirsute variety, Okhotsk Sea, E. of Sakhalin Island, depth 137 m.

D. ambigua Lillj. 1886 *D. a.* (descr. nulla), W. Lilljeborg in: C. W. S. Aurivillius in: Bih. Svenska Ak., v. 11 nr. 4 p. 41.

L. 12 mm.

From N. E. of Tromsø or West Finmark.

D. quadri-plicata Lillj. 1886 *D. q.-p.* (descr. nulla), W. Lilljeborg in: C. W. S. Aurivillius in: Bih. Svenska Ak., v. 11 nr. 4 p. 41.

L. 12 mm.

From N. E. Tromsø or West Finmark; at Baddern, between depths 75 and 94 m.

2. Gen. **Brachydiastylis** Stebbing

1912 *Brachydiastylis*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 176.

Pseudorostral lobes upturned in the female and the carapace short, the third and fourth pedigerous segments tending to coalesce, and the third peraeopod widely separated from the second in the ovigerous female. Antenna 1 with third joint of peduncle the longest. Second joint of third maxilliped distally expanded, third not wider than fourth. Third and fourth peraeopods of female without rudimentary exopods. Exopod of uropods much longer than endopod.

1 species.

1. **B. resimus** (Kröyer) 1846 *Cuma resima*, Kröyer in: Naturhist. Tidsskr., ser. 2 v. 211 p. 165, 206, 211 t. 2 f. 2a, b | 1849 *C. r.*, Kröyer in: Voy. Nord Crust., t. 3 f. 1a—p | 1871 *Diastylis r.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 5 | 1880 *D. r.*, Stuxberg in: Bih. Svenska Ak., v. 5 nr. 22 p. 22 | 1883 *D. resimus*, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 12, 58 | 1893 *Diastylopsis resima*, T. Stebbing in: Int. sci. Ser., v. 74 p. 311 | 1894 *Diastylis resimus*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 277 | 1900 *Diastylopsis resima*, G. O. Sars, Crust. Norway, v. 3 p. 65 t. 47 | 1900 *D. r.*, Zimmer in: Fauna arctica, v. 1 p. 426 (with synonymy) | 1901 *D. r.*, T. Scott. in: Rep.

Fish. Board Scotl., v. 19 p. 274 | 1908 *D. r.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 184 | 1912 *D. (?) r.*, Calman in: *P. U. S. Mus.*, v. 41 p. 666.

♀. Pseudorostral lobes abruptly upturned, with plumose setae radiating from the apex, antero-lateral corners forming a sharp tooth, followed by a smaller one; eyelobe obsolete. frontal lobe with 3 median pairs of denticles, lower margin of carapace anteriorly denticulate. Pedigerous segments 3—5 with postero-lateral corners broadly rounded. Pleon segments unarmed, 5th

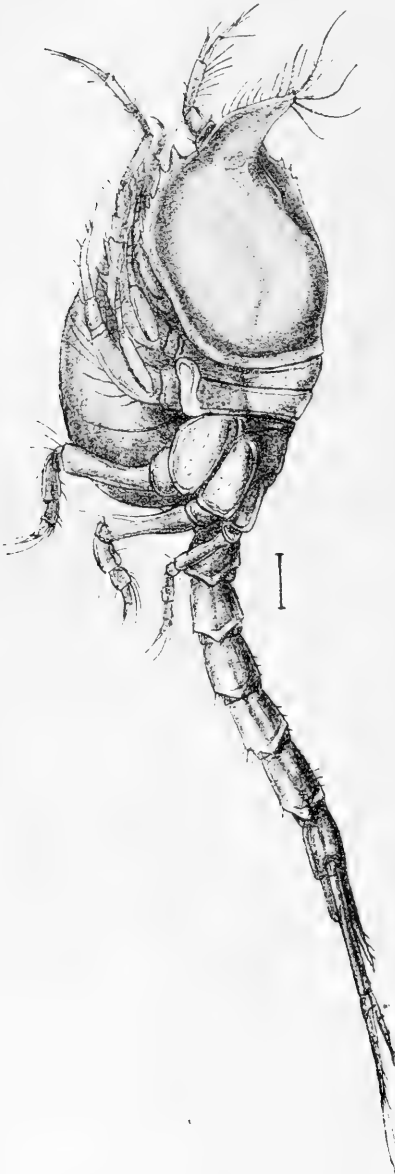


Fig. 62.

B. resimus (♀) (Kröyer) (after Sars).



Fig. 63.

B. resimus (Kröyer), pereopod 1 (after Sars)

not longer than 6th, telson scarcely $\frac{2}{3}$ ^{ds} as long as peduncle of uropods, its slender distal half with about 4 pairs of lateral spines and an apical pair. Antenna 1, 2nd joint shorter than 1st, 3^d nearly as long as both combined,

setose, principal flagellum 4-jointed, small accessory 2-jointed. Antenna 2 of 4 joints, none elongate. Peraeopod 1, 2nd joint much shorter than rest of limb, with 3 strong teeth on distal part of medial margin, 5th and 6th

joints equal, each much longer than the 7th; peraeopod 2 short, 5th joint not equal to 6th and 7th combined; 3^d and 4th pairs stout, with 5th joint broad but shorter than the 4th. Endopod of uropod about as long as the peduncle, rather over $\frac{2}{3}$ ^{ds} as long as the setose exopod, with only a single spinule on each of its 3 joints, the apical spine long. Colour brownish grey. L. about 5 mm.

♂. Pseudorostral lobes nearly horizontal with setules at apex, antero-lateral corners rectangular, unarmed, the carapace smooth. Pedigerous segment 5 with postero-lateral corners acutely produced. Pleon segments 1—3 each with medio-ventral denticle, 5th segment longer than 6th, telson scarcely shorter than peduncle of uropods. Antenna 1, principal flagellum 6-jointed, accessory not very small, 3-jointed; peraeopod 2 with 2nd joint large, the slender 5th much longer than 6th and 7th combined. L. 6 mm.

Arctic, N. Atlantic, Norway, Denmark, depth 6—128 m.



Fig. 64.

B. resimus (♂) (Kröyer), peraeopod 2 (after Sars).



Fig. 65.

B. resimus (♂) (Kröyer), uropod (after Sars).

3. Gen. **Diastylopsis** S. I. Smith

1880 *Diastylopsis*, S. I. Smith in: Rep. geol. Surv. Canada, app. D. p. 215B | 1893 *D.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 311 | 1900 *D.*, G. O. Sars, Crust. Norway, v. 3 p. 64 | 1900 *D.*, Zimmer in: Fauna arctica, v. 1 p. 426 | 1908 *D.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 181, 189 | 1909 *D.*, Zimmer in: Ergeb. Schwed. Südpol.-Exp., v. 6 nr. 3 p. 25 | 1911 *D.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 366, 378 | 1912 *D.*, Calman in: P. U. S. Mus., v. 41 p. 662 | 1912 *D.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146, 147.

Pseudorostral lobes of female not strongly upturned with antero-lateral corners usually produced. Carapace slender. First three pedigerous segments dorsally short, fourth dorsally long, third and fourth with a tendency to coalesce, their sides strongly outdrawn backwards, so that in the female the second and third peraeopods are wide apart. Eye wanting. Second joint of third maxilliped distally widened. Third and fourth peraeopods in female with rudimentary exopods; last three pairs of peraeopods stout.

8 species accepted, 2 doubtful.

Synopsis of accepted species:

- 1 { Telson much shorter than peduncle of uropods — 2.
 { Telson not much shorter than peduncle of uropods — 5.

- 2 { Fifth pleon segment decidedly longer than sixth . . . 1. *D. neozealanica*
 { Fifth and sixth pleon segments differing little in length — 3.
- 3 { Carapace encircled by transverse converging lines . . . 2. *D. dawsoni*
 { Carapace without encircling lines — 4.
- 4 { First pleon segment with prominent medio-ventral tooth,
 { without latero-ventral spines 3. *D. elongata*
 { First pleon segment without prominent ventral tooth,
 { with latero-ventral spines 4. *D. crassior*
- 5 { Telson longer than peduncle of uropods 5. *D. annulata*
 { Telson not longer than peduncle of uropods — 6.
- 6 { Carapace shorter than the pedigerous segments combined 6. *D. robusta*
 { Carapace not shorter than the pedigerous segments
 { combined — 7.
- 7 { Third maxilliped with laminar distal expansion of 2nd
 { joint 7. *D. thileni*
 { Third maxilliped without laminar expansion of 2nd joint 8. *D. dentifrons*

1. *D. neozealanica* (G. M. Thoms.) 1892 *Diastylis n.*, G. M. Thomson in: J. Linn. Soc. London, v. 24 p. 268 t. 18 f. 1—11 | 1908 *Diastylopsis (?) neoseelandiae*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 190.

Pseudorostral lobes not much produced, conical, somewhat arched in dorsal outline, antero-lateral angle obsolete; carapace with eyelobe small or wanting, dorsally having 4 transverse bars on the anterior half, the last bilobed, and a fifth parallel to and near the hind margin. Pedigerous segment 4 the longest, its side-plates directed backwards; postero-lateral corners of the 5th produced obtusely backwards; 6th pleon segment considerably shorter than the 5th and subequal to the telson, which is about $\frac{3}{5}$ as long as the peduncle of the uropods and has 8 pairs of lateral spines on the tapering distal half. Maxilliped 3 with long setae on the widened distal end of the 2nd joint, 3^d much wider than the small 4th joint. Peraeopod 1 very long, 2nd joint shorter than rest of limb, without strong teeth on medial margin, 5th joint rather longer than 6th, 6th than 7th; peraeopod 2, 5th joint longer than 6th and 7th combined; peraeopods 3, 4 without exopod (text) but apparently with rudiment (Fig. 8, G. M. Thomson), and their presence ascertained (Calman). Endopod of uropods about half as long as the peduncle, 1st joint longer than 2nd, 2nd than 3^d, with 5, 4, 4, or 6, 3, 4 spines on the joints respectively, the 2-jointed exopod a little longer. L. ♀ 8 mm, ♂ unknown.

New Zealand, Bay of Islands, depth 15 m.

2. *D. dawsoni* S. I. Sm. 1880 *D. d.*, S. I. Smith in: Rep. geol. Surv. Canada, app. D. p. 215B | 1900 *D. d.*, G. O. Sars, Crust. Norway, v. 3 p. 64 | 1908 *D. d.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 183, 190 | 1912 *D. d.*, Calman in: P. U. S. Mus., v. 41 p. 605, 662 tf. 81—90.

Pseudorostral lobes well produced, horizontal, acute, antero-lateral corners acutely produced in ♀ only; carapace slender, partly encircled anteriorly by 4 pairs of fine lines, converging downwards, 1st pair nearly meeting some way in front of the small eyeless eyelobe, 2nd and 3^d meeting the sutures of the frontal lobe, which is crossed by lines to the rear of the 2 lateral pairs, the 4th pair not meeting dorsally; lower margin serrate for a small distance anteriorly. Pedigerous segment 2 with side-plates defined above by a notch, rounded in front, covering those of segment 1, in the ♂

themselves concealed by those of segment 3, which in both sexes are strongly produced backwards: 4th segment very long, firmly united to the 3^d, 5th with a pair of ventral teeth. 5th pleon segment not longer than 6th; telson in ♂

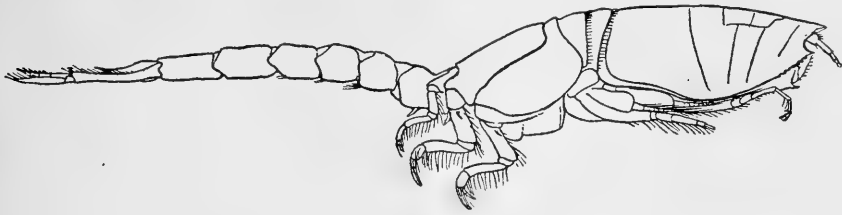


Fig. 66.

D. dawsoni (♀ juv.) S. I. Smith (after Calman).

as long as preceding segment, with 9 pairs of lateral spines, in ♀ $\frac{3}{4}$ ths of preceding segment, with about 4 pairs of lateral spines. Antenna 1, 2nd joint shorter than 3^d, accessory flagellum 2-jointed. Antenna 2 ♀ of 4 joints, the 3^d long. Maxilliped 3, the long 2nd joint much widened distally, medial and lateral apices both produced, 3^d joint 3 times as wide as the 4th. Peraeopod 1 uncommonly short, 2nd joint much longer than rest of limb. Peraeopod 2, 5th joint nearly twice as long as 6th and 7th combined; 3^d and 4th pairs in ♀ with minute rudimentary seemingly 1-jointed exopod. Peduncle of uropods twice as long as the telson in ♀ but less than that in the ♂, more than twice the endopod but less than twice the exopod; 1st joint of endopod equal to the 2nd and longer third combined. L. ♀ 14.5 mm, ♂ 9 mm.

Queen Charlotte Islands, 203 m, and other parts off W. coast of N. America from Alaska to California, at depths 13–57 m.

3. *D. elongata* Calm. 1911 *D. e.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 312, 379 t. 37 f. 1–12.

Pseudorostral lobes straight, acute, slightly raised in ♀, not in ♂, antero-lateral corners rounded, serrate, with the sinus above them slightly marked; carapace compressed, smooth; eye-lobe with no distinct eye, ending in a minute tooth in ♀ only. Pleon segment 1 with backward pointing medio-ventral tooth, 5th not much longer than 6th, its postero-lateral angles spiniform, telson differing little in length from the 6th segment, with about 8 pairs of lateral spines and a short apical pair in the ♀, a little longer and narrower in the ♂. Antenna 1, 3^d joint longer than 2nd, flagellum 3- or 4-jointed, accessory 2- or 3-jointed. Antenna 2 of ♀ 3-jointed. Peraeopod 1, 2nd joint considerably longer than rest of limb, with tooth at distal medial corner, 5th and 6th subequal, each longer than 7th; peraeopod 2 ♀, 2nd joint considerably longer than rest of limb, 2nd, 3^d, and 4th each with small tooth at distal medial corner; rudimentary exopods of 3^d and 4th peraeopods in ♀ 2-jointed; peraeopod 2 ♂, 2nd joint scarcely longer than rest of limb, 5th joint much instead of little longer than 4th, 6th longer than 7th, which ends in 2 little curved claws; peraeopods 3, 4, 2nd joint toothed at lateral apex, in 1, 5 the 3^d joint toothed at medial apex. Peduncle of uropods once and a half as long as the telson, slightly less than that in proportion to the

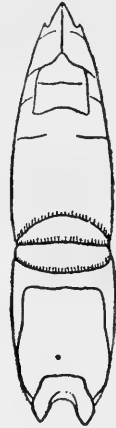


Fig. 67.

D. dawsoni (♀ juv.) S. I. Smith, carapace and pedigerous segments (after Calman).

nearly equal rami. exopod slightly the shorter, 1st joint of endopod longer than 2nd and 3^d combined, marginal spines numerous. L. about 9 mm.

New Zealand, Lyttleton Harbour, depth 2—9 m; Akaroa Harbour.

4. *D. crassior* Calm. 1911 *D. c.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 312, 381 t. 37 f. 13—18.

Near to *D. elongata*, but pseudorostral lobes not raised, less acutely produced; eyelobe not prominent dorsally, without apical tooth; pleon segments stouter, 1st with no strong medio-ventral tooth but with 2 ventro-lateral rows of denticles, postero-lateral angles of 3^d and 4th as well as 5th spiniform. telson less narrowed distally, peraeopod 2 with 2nd joint little longer than rest of limb, produced to a strong tooth at distal medial corner, the 3^d joint having 2, and the 4th 3 strong teeth, the following legs stouter and longer than in the companion species; peduncle of the uropods twice as long as the telson, about once and a half as long as the endopod, which is shorter than the exopod. L. ♀ 9.25 mm, ♂ unknown.

New Zealand, Lyttleton Harbour, depth 2—9 m.

5. *D. annulata* (Zimmer) 1902 *Leptostylis a.*, Zimmer in: Ergeb. Hamburg. Magalh.-Sammelr., v. 2 Cumac. p. 10 ff. 15—17 | 1908 *Diastylopsis a.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 183, 190 | 1909 *D. a.*, Zimmer in: Ergeb. Schwed. Südp.-Exp., v. 6 nr. 3 p. 1, 2, 23, v. 7 nr. 3 t. 8 f. 131—133.

Pseudorostral lobes not upraised, well produced in front of the eyeless eyelobe, antero-lateral corners acute, producing a well marked sinus; carapace with a longitudinal series of 3 forward pointing teeth on the frontal lobe, which is crossed by 2 lines and bounded by a bilobed third line; to these succeed a pair not meeting in the middle, 3 others which nearly meet and 2 more which show no median interruption, the last of them forming the upraised hind margin. The postero-lateral corners of the 5th pedigerous segment are not outdrawn. The fifth pleon segment is little longer than the 6th or than the telson, of which the basal section carries 3 pairs of setae while the narrowed end has 4 pairs of lateral spines and a somewhat larger apical pair. Peraeopod 2, as figured, has the 4th joint longer than the 5th; the 3^d and 4th pairs have rudimentary 2-jointed exopods; the 4th and 5th pairs have the 2nd joint remarkably short. The peduncle of the uropods is a little shorter than the telson, but longer than the endopod, in which the 1st joint is longer than 2nd and 3^d combined, the spines on the medial margin being respectively 5, 2, 2. Colour yellowish white. L. ♀ not fully adult, 6 mm.

South Georgia, low tide to 15 m.

6. *D. robusta* (Zimmer) 1902 *Leptostylis r.*, Zimmer in: Ergeb. Hamburg. Magalh.-Sammelr., v. 2 Cumac. p. 13 ff. 22—31 | 1908 *Diastylopsis r.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 183, 190.

Pseudorostral lobes shortly produced in front of the very small eyelobe, antero-lateral corners bluntly produced and forming a distinct sinus. Carapace shorter than the combined pedigerous segments, crossed by a pair of lines or ridges which end without meeting near the back of the frontal lobe; the pedigerous segments have the front margin finely denticulate, and the 3^d and 4th have each 2 ridges on the expanded sides parallel to the hind margin. The pleon segments carry dorsally 3—6 plumose setae and have postero-ventral spines; the 5th segment is rather longer than the 6th, and the 6th

than the telson, to which are attached 2 pairs of lateral spines, the upper very small, and a large apical pair. Antenna 1 ♀ with each flagellum 3-jointed, in the ♂ the principal is 5-jointed. Antenna 2 ♀ showing 1 large joint followed by a minute one. The peduncle of the uropods in the ♀ is as long as the 6th pleon segment and as the exopod, rather longer than the endopod, which carries 6, 2, 2 spines respectively on the 3 joints; in the ♂ the peduncle is rather longer, and the endopod has 12, 4, 3 spines on the medial margin, the apical spine being continuous with its 3^d joint. Colour yellowish white. L. about 8 mm.

Magellan Strait, Punta Arenas, depth 4 m.

7. **D. thileni** (Zimmer) 1902 *Leptostylis t.*, Zimmer in: Zool. Jahrb., Syst. v. 17 III p. 449 tf. G—W | 1908 *L. t.*, Calman in: Ann. nat. Hist., ser. 8 v. 1 p. 239 | 1908 *Diastylopsis t.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 183, 190.

Pseudorostral lobes bluntly produced in front of the eyelobe, sinus defined by an acute antero-lateral tooth. Carapace little longer than pedigerous

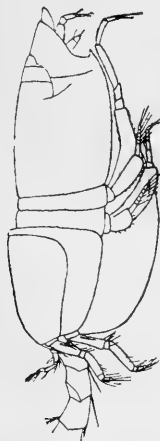


Fig. 68.

D. thileni (♀) (Zimmer).



Fig. 69.

D. thileni (Zimmer), maxilliped 3.

segments combined, frontal lobe with 2 transverse lines, a pair of lateral lines from the middle of its sutures not quite reaching the lower margin of the carapace, and a shorter pair crossing the ends of the sutures. Pedigerous segments 1—3 dorsally short, with denticulate front margin, sides of 3^d almost encircling the very long 4th, with which it is nearly fused, 4th nearly surrounding the small 5th, of which the hind corners are little and obtusely extended. Pleon segments with postero-ventral spines and some dorsal setae; telson rather longer than the preceding segment, with 2 pairs of setae on the wide basal section and 6 of lateral spines on the narrowed end. Antenna 1, accessory flagellum very small. Antenna 2, 3- (text) or 4-jointed (fig.). Maxilliped 3. 2nd joint greatly widened distally and on lateral apex strongly produced to an acute point, while the whole distal margin is produced to form a rounded plate covering (from below) nearly all the remaining joints. Peraeopod 2 with 4th joint longer than 5th, 3^d and 4th pairs with rudimentary exopods, 4th pair with 2nd joint not especially short. Peduncle of uropods nearly as long as the telson, longer than the endopod, which is

longer than the exopod and has 4, 3, 3 spines on its 3 joints respectively; colour yellowish white. L. ♀ about 5 mm.

New Zealand, Bay of Plenty.

8. **D. dentifrons** (Zimmer) 1903 *Leptostylis d.*, Zimmer in: Zool. Jahrb., Syst. v. 18 vi p. 688 tf. Z. AA. BB. | 1908 *Diastylopsis d.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 158, 190 t. 46 f. 109—120 | 1909 *D. d.*, Zimmer in: Ergeb. Schwed. Südp.-Exp., v. 6 nr. 3 p. 26.

Very near to *D. annulata* (nr. 5) but here the distal section of the telson carries 9 pairs of lateral spines and a strong apical pair, and the telson itself is scarcely longer than the peduncle of the uropods, of which the rami are only $\frac{2}{3}$ ^{ds} as long as the peduncle but subequal one to the other, the 1st joint of the endopod not so long as the 2nd and 3^d combined, the spines of the 3 joints being respectively 7, 3, 2. Colour yellowish white. L. reaching 11 mm.

Rhodes Bay, Kerguelen, 19 m.

D. insularum (Calm.) 1908 *Leptostylis* (?) *i.*, Calman in: Ann. nat. Hist., ser. 8 v. 1 p. 234 tf. 1—5 a | 1911 *Diastylis i.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 342, 385.

Agrees closely with *D. neozealanica* (nr. 1) in form and armature of telson and uropods, in having the 3^d joint of the 3^d maxilliped wider than the 4th, and the 3^d and 4th peraeopods of the ♀ provided with minute 2-jointed exopods, but is distinguished by the carapace, which has the pseudorostral lobes horizontal, acute, much more produced in ♀ than in ♂, eyelobe a little broader than long, inflated, but without pigment, frontal lobe crossed by 2 low, rounded, crescentic ridges, with a shallow depression at the end of each of its bounding sutures; a longitudinal depression between the branchial regions, a slight elevation of the dorsal hind margin, the whole surface spinulate and an oblique forward running line of spinules on each antero-lateral surface. Antenna 1 of ♂ with 3^d joint much shorter than 1st or 2nd, instead of subequal, as in ♀, to each. Peraeopod 1 has the 6th joint a little longer than either of the subequal 5th and 7th joints. L. between 9 and 10 mm. Seems to be a variety of *D. neozealanica*.

New Zealand, Bay of Islands; Lyttleton Harbour, 2—9 m.

D. sp. (Calm.) 1908 *Leptostylis sp.*, Calman in: Ann. nat. Hist., ser. 8 v. 1 p. 239.

Agrees closely with *D. thileniusi* (nr. 7), but has carapace and pedigerous segments together not longer than the pleon, 3^d pedigerous segment not strongly produced backwards at the sides, so that the interval is slight between peraeopod 2 and 3, and the telson is armed with only 3 pairs of lateral spines. L. largest ♂ 3.3 mm. Probably young stage of *D. thileniusi*.

New Zealand, Bay of Islands.

4. Gen. **Adiastylis** T. Stebbing

1912 *Adiastylis*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146, 148.

Telson cylindric, with lateral spines on the short, narrowed distal section. Eye wanting. Maxilliped 1 with branchial leaflets not very numerous. Maxilliped 3, 2nd joint distally widened, the following joints not widened. First peraeopod elongate.

4 species.

Synopsis of species:

1. { Peduncle of uropods longer than the telson — 2.
 { Peduncle of uropods shorter than the telson — 3.

- | | | | |
|---|---|--|----------------------------|
| 2 | { | Pedigerous segments dorsally dentate | 1. <i>A. acanthodes</i> |
| | | Pedigerous segments not dorsally dentate | 2. <i>A. longicaudatus</i> |
| 3 | { | Exopod of uropods much shorter than the endopod . . | 3. <i>A. longipes</i> |
| | | Exopod of uropods not shorter than the endopod . . . | 4. <i>A. costatus</i> |

1. *A. acanthodes* Stebb. 1912 *A. a.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 148 t. 53.

With points of resemblance to *Diastylis anomalus* (p. 106).

Pseudorostral lobes well produced acutely in advance of the eyeless eyelobe, forming an obtuse angle with the curved medio-dorsal line of the carapace, their upper surface like the rest of the carapace diversified with many unequal denticles. Pedigerous segments much denticulate, the last 4 each with a pair of dorsal teeth specially conspicuous, the first 2 each with front margin serrate. Pleon longer than anterior part of the body, with dorsal and some subventral denticles, 5th segment much longer than 6th, but shorter than the telson, which is about $\frac{2}{3}$ ^{ds} as long as peduncle of uropods, its last third narrow, with 3 or 4 pairs of lateral spines and a larger apical pair. Antenna 1, principal flagellum 5- (or 6-) jointed, accessory 4-jointed. Antenna 2, 2nd and 5th joints of peduncle long, flagellum comparatively short. Maxilliped 3, 2nd joint with long setae on the dilated end, none of the other joints dilated. Peraeopod 1, 2nd joint denticulate. Peraeopod 2, with tooth at apex of the short stout 2nd joint, 5th and 7th joints long and slender, 7th more than twice as long as the 6th. Peraeopods 3 and 4 with 2nd joint strikingly narrowed distally. Pleopods 1 considerably longer than the 2nd pair. Peduncle of uropods much longer than exopod, which is little longer than the first 2 joints of the endopod, 2nd joint of endopod $\frac{2}{3}$ ^{ds} the length of the 1st, 3^d joint missing from the specimen. L. ♂ about 9 mm. ♀ unknown.

S. Africa, Cape Natal N. by E. 24 miles, depth 805 m.

2. *A. longicaudatus* (Bonnier) 1896 *Leptostylis longicaudata*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 557 t. 30 f. 2, 2a—o | 1908 *Diastylis l.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 183 | 1912 *Adiastylis longicaudatus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 148.

Pseudorostral lobes acutely produced, antero-lateral corners faintly marked, not produced; carapace besprinkled with spinules, medio-dorsal line of frontal lobe slightly undulating; pedigerous segments and pleon not dentate, 5th segment of pleon not much longer than others, telson shorter than peduncle of the uropods but much longer than the rami, the short distal section carrying 3 pairs of lateral spines and a larger apical pair. Eye quite wanting. Antenna 1, 3^d joint of peduncle not longer than 2nd, principal flagellum 4-jointed, accessory 3-jointed, very short. Antenna 2 of 4 joints, the 1st the longest. Peraeopod 1 very long, 7th joint a little longer than the 6th; peraeopod 2, 5th and 7th joints not very long, 7th only twice as long as the 6th. Peraeopods 3 and 4 with 2-jointed rudimentary exopods. Exopod of uropods notably longer than the endopod, of which the 1st joint is not much longer

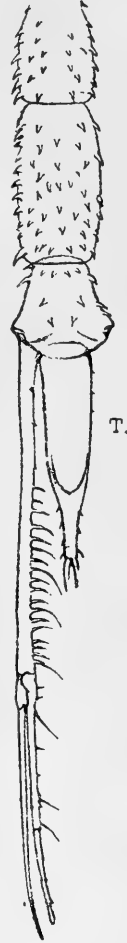


Fig. 70.

A. acanthodes (♂)
Stebbing, telson
and uropod.

than the 2nd or 3^d, with 3, 2, 2 spines respectively on the medial margin. L. ♀ juv. nearly 10 mm. ♂ unknown.

Bay of Biscay, depth 650 m.

3. *A. longipes* (O. Sars) 1871 *Diastylis l.*, G. O. Sars in: Öfv. Ak. Förh., v. 28: p. 74 | 1871 *D. l.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 32 t. 13 f. 65—67 | 1879 *D. l.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 58 | 1896 *D. l.*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 550 t. 29 f. 4a—p | 1912 *Adiastylis l.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 148.

Pseudorostral lobes moderately produced in advance of the small eyeless eyelobe, horizontal, acute, with a subapical pair of spinules, antero-lateral angles obsolete; anterior part of carapace with several variously disposed spinules; 1st pleon segment with ventral longitudinal crest of 4 or 5 conspicuous teeth, 5th and 6th segments subequal, telson rather longer than both combined, and longer than peduncle of uropods, the narrowed distal part short, with 4 pairs of lateral spines and a small apical pair. Antenna 1 elongate, 2nd joint of peduncle much longer than 3^d, principal flagellum long, 6-jointed, accessory stout, 3-jointed. Mandibles with 16 or 17 spines in the spine-row. Maxilliped 3, with a strong spine on the 2nd and also on the 4th joint. Peraeopod 1 extremely long, especially in regard to the last 3 slender joints, of which joint 6 is actually longer than the 2nd joint. Peraeopod 2, 5th joint more than twice as long as the 6th and 7th combined in the ♂ (G. O. Sars), 7th very short (G. O. Sars), not very short in the ♀ (Bonnier). Peraeopods 3, 4, 4th joint more or a little less than twice as long as the 3 following joints combined. Rudimentary exopods on these limbs not recorded for ♀ juv. Peduncle of uropods much longer than the rami, endopod with 1st joint longer than 2nd and 3^d combined, spines on medial margin respectively 12 or 13, 5, 4; exopod little longer than 1st joint of endopod. L. ♂ juv. about 8 mm, ♀ juv. 12 mm.

Atlantic: Lat. 60° 45' N., long. 4° 49' W., 933 m; lat. 59° 41' N., long. 7° 34' W., 838 m; lat. 38° 7' N., long. 9° 18' W., 1036 m; Bay of Biscay, depth 950 m.

4. *A. costatus* (Bonnier) 1896 *Diastylis costata*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 553 t. 30 f. 1, 1a—m, o | 1912 *Adiastylis costatus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 148.

Pseudorostral lobes acute, slightly raised. Eyeless eyelobe very small, behind it runs a median serrate crest, bifurcating about the middle of the carapace, the 2 arms reaching the hind margin; more or less oblique to the median are 4 pairs of curved crests, and spinules are irregularly dispersed in the intervals. Pedigerous segments 3—5 with transverse rows of spinules; pleon segments 1—5 with longitudinal rows; telson distally with 5 lateral pairs and an apical pair. Antenna 1 with 4 spines on 1st joint, 3^d joint longer than 2nd, principal flagellum 4-, accessory 2-jointed. Antenna 2 4-jointed, 3^d joint the longest. Mandible with 12 spines in the spine-row. Peraeopod 1, 2nd joint very long. Peraeopod 2, the long slender 5th joint more than twice as long as 6th and 7th together, 7th twice the 6th. Peduncle of uropods shorter than the telson, but much longer than the exopod; exopod a little longer than the endopod, the 1st joint of which nearly equals the 2nd and 3^d together, with 2, 2, 1 spines on the medial margin of the 3 joints respectively. L. ♀ juv. 6 mm.

Bay of Biscay, depth 1410 m.

5. Gen. **Makrokylindrus** T. Stebbing

1912 *Makrokylindrus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 129, 146, 150.

Carapace denticulate; no distinct eye; telson elongate, basal portion cylindric, much longer than the post-anal portion, which carries only the two apical spines. Peraeopods of the female, so far as known, without rudimentary exopods on the third and fourth pairs.

6 species.

Synopsis of species:

- | | | | |
|---|---|--|-------------------------|
| 1 | { | Telson distally serrate | 1. <i>M. serricauda</i> |
| | { | Telson not distally serrate — 2. | |
| 2 | { | Carapace with transverse raised girdle — 3. | |
| | { | Carapace without transverse raised girdle — 4. | |
| 3 | { | Eyelobe distinct | 2. <i>M. fragilis</i> |
| | { | Eyelobe wanting | 3. <i>M. cingulatus</i> |
| 4 | { | Pedigerous segments 3 and 4 dorsally fused | 4. <i>M. dubius</i> |
| | { | Pedigerous segments 3 and 4 not dorsally fused — 5. | |
| 5 | { | Pedigerous segments smooth | 5. <i>M. erinaceus</i> |
| | { | Pedigerous segments spinose | 6. <i>M. josephinae</i> |

1. *M. serricauda* (T. Scott) 1912 *Diastylis* s., T. Scott in: Sci. Invest. Fish. Scotl., 1911 nr. 1 p. 3 t. 1 f. 1—4 | 1912 *Makrokylindrus* s., T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 150.

Near to *M. josephinae* (nr. 6) but distinguished by the telson. Pseudorostral lobes well produced to a blunt apex. Carapace dorsally strongly spinose and spinulose, lower margin pectinate for more than half its extent from the front. Pedigerous segment 5 the longest, its postero-lateral angles rounded. Pedigerous segments and pleon all dorsally rough with spicules, the pleon segments also ventrally. Telson rather longer than peduncle of uropods, only slightly narrowing in the distal third, the sides of which are coarsely serrate, with intervening setules; the apical spines stout, somewhat divergent. Endopod of uropods slightly longer than the exopod, half as long as the peduncle, its 1st joint twice as long as the 2 subequal following joints combined; spines on the medial margin of the 3 joints respectively 7, 1, 1. L. ♀ about 12 mm.

Lat. 59° 36' N., long. 7° 00' W., depth 140 m.

2. *M. fragilis* Stebb. 1912 *M. f.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 150 t. 54, 55.

Pseudorostral lobes well produced subacutely in front of the prominent rounded eyeless eyelobe, with dorsal denticles near to the meeting line.

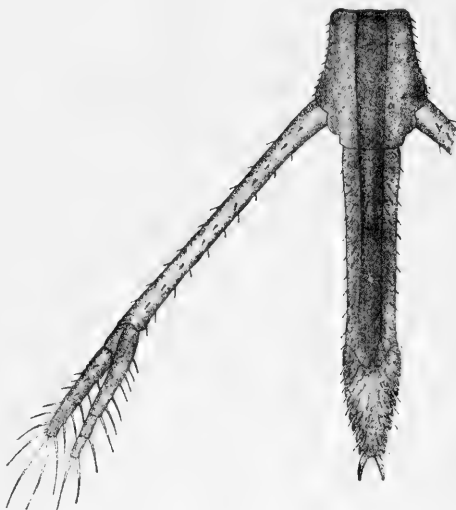


Fig. 71.

M. serricauda (♀) (T. Scott), telson and uropod.

Behind the eyelobe a central ridge, elevated at the middle, ascends to a bilobed girdle which crosses the carapace a little behind the middle, each lobe in its forward curve meeting a dentate carina which starts from the pseudorostral processes, while from the meeting point a ridge descends, giving off two divergent branches which reach the lower margin. Pedigerous segments 3 and 4 dorsally coalesced, 5th rather long with postero-lateral angles rounded. Pleon segments 1—3 in the ♂ each with a dorsal pair of denticles, the rest and all in the ♀ smooth; telson cylindric till near the end, sides smooth at the base, then serrate, the hinder half smooth, the truncate apex carrying a pair of large spines. Antenna 1, first 2 joints elongate,

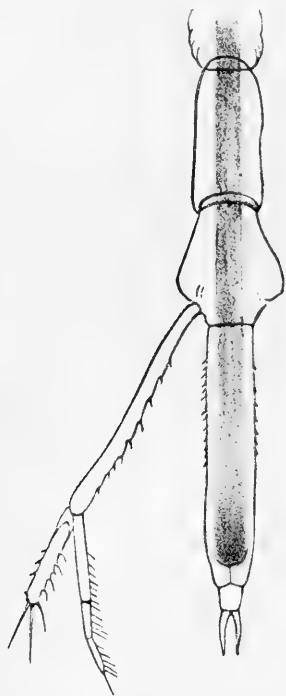


Fig. 72.

M. fragilis Stebbing, telson and uropod.



Fig. 73.

M. fragilis (♀) Stebbing, maxilliped 2.

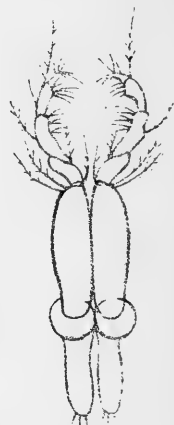


Fig. 73 a.

M. fragilis Stebbing, maxilliped 2.

principal flagellum 4-jointed, accessory small, 2-jointed. Antenna 2 of ♀ 4-jointed. Mandibles with about 20 spines in the spine-row. Maxilla 2 with distal plate seemingly undivided. Maxilliped 1, branchial leaflets numerous. Maxilliped 2 with long lamina in place of vibratory fan. Maxilliped 3, 2nd joint strongly produced, 3^d short, 5th, 6th, and 7th equal in length. Peraeopod 2 with 6th joint very short. Pleopods of male with short rami. Uropods slender, peduncle shorter than telson, endopod $\frac{2}{3}$ ^{ds} as long as the peduncle, with 7, 5, 4 spines on medial margin of its 3 joints respectively in the ♀, 1st joint a little longer than the equal 2nd and 3^d combined; exopod with short 1st joint, 2nd equal to 1st of the endopod. L. 10 mm.

S. Africa, Cape Natal N. by E. 24 miles, depth 805 m.

3. **M. cingulatus** (Calm.) 1905 *Diastylis c.*, Calman in: Siboga-Exp., nr. 36 p. 2, 19 t. 2 f. 26—29 | 1908 *D. cingulata*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 183 | 1912 *Makrokylindrus cingulatus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 150.

Pseudorostral lobes well produced, horizontal, subacute, with 2 apical spines. Carapace subglobose, encircled about at the middle by a stout sinuous ridge closely set with stout spines, in front of ridge many spines, mostly uncinat and distally tuberculate, and on each side a single smooth straight spine longer than the rest; behind the ridge spines larger, less crowded, short, stout, conical; lower margin fringed with spines at the rear short and thick, towards the front long and slender. Eyelobe and eye wanting. Pedigerous segment 2 at the sides covering the 1st, 3^d and 4th fused, their side-plates not expanded, those of the 5th not extended backwards. Pleon segments 1—6 beset with spinules. Telson longer than peduncle of uropods, $\frac{3}{4}$ ^{ths} of length cylindric, with sides denticulate near the base, the tapering post-anal fourth slightly decurved, with subapical pair of setules and apical pair of spinules. Antenna 1, first 2 joints of peduncle rather long, accessory flagellum small. Peraeopod 5 articulated near the dorsal surface of the segment. Peduncle of uropod about $\frac{5}{6}$ ^{ths} as long as telson, with 8 spinules on distal half of the medial margin; endopod not quite half as long as the peduncle, with long slender spines on the medial margin, 1st joint longer than 2nd and 3^d combined, 2nd longer than 3^d, exopod only reaching end of the 2nd. L. ♂ juv. 15 mm.

Malayan Archipelago: Lat. 5° 40' 7" S., long. 120° 45' 5" E., depth 1158 m; lat. 6° 24' S., long. 124° 39' E., depth 2798 m.

4. **M. dubius** (Bonnier) 1896 *Diastylopsis (?) dubia*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 539 t. 30 f. 3, 3a—m | 1900 *D. (?) tumida* (laps. for *dubia*), G. O. Sars, Crust. Norway, v. 3 p. 64 | 1905 *D (?) dubia*, Calman in: Siboga-Exp., nr. 36 p. 23 | 1908 *D. (?) d.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 182 | 1912 *D. (?) d.*, T. Scott in: Sci. Invest. Fish. Scotl., 1911 nr. 1 p. 4 t. 1 f. 5 | 1912 *Makrokylindrus dubius*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 150.

Pseudorostral lobes horizontal, acute, with apical pair of spines. Carapace and other parts of body beset with spinules and spines. Pedigerous segments 3 and 4 dorsally coalesced, the postero-lateral corners not extended backwards. Telson longer than peduncle of uropods, full $\frac{2}{3}$ ^{ds} of length cylindric, with lateral series of spinules (or serration Scott), last third tapering, armed only with apical pair of spinules. No eye. Antenna 1 with long spinose 1st joint, 2nd intermediate in length between 1st and 3^d, flagellum 4-jointed, the small accessory 3-jointed. Mandible with 17 spines in spine-row. Maxilliped 1 with about 10 small branchial leaflets. Maxilliped 3, 2nd joint distally widened, moderately produced. Rudimentary exopods on peraeopods

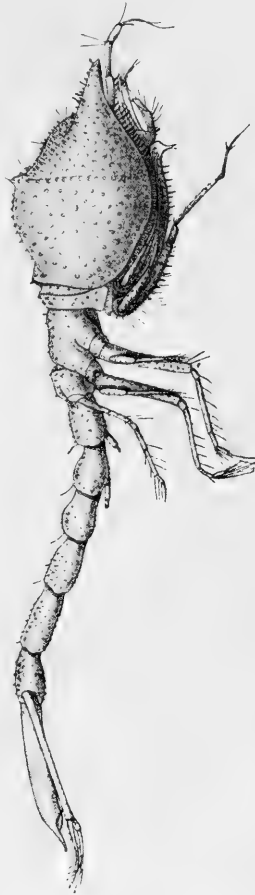


Fig. 74.

M. cingulatus (♂ juv.) (Calman).

3 and 4 of ♀ juv. supposed to be inconstant, but possibly the young specimen showing these appendages may have been a ♂ juv. Endopod of uropods rather more than half as long as the peduncle, slightly longer than exopod, 1st joint longer than 2nd and 3^d combined, spines on medial margin respectively 4, 2, 2, with a longer apical spine. L. ♀ juv. 9 mm, ♂ juv. slightly larger.

Bay of Biscay, depth 650—950 m.

5. **M. erinaceus** (O. Sars) 1887 *Diastylis e.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 9, 44, 58 t. 9 f. 9—14 | 1905 *D. e.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 47 | 1912 *Makrokylihdrus e.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 150.

Pseudorostral lobes horizontal, acute, well produced in front of the small eyeless eyelobe. Carapace large, tumid, without carinae, beset with numerous forward pointing spines of generally uniform size, continued along sides of pseudorostrum; anterior part of lower margin finely denticulate. Pedigerous segments smooth with side-plates evenly rounded. Pleon segment 1 with serrate ventral keel, this and the next 2 segments each with paired dorsal spines and postero-dorsal setae. Antenna 1 with spinose 1st joint, 2nd nearly as long, 3^d much shorter, accessory flagellum very small. Antenna 2 of ♀ 5-jointed, twisted. Peraeopod 1 very long, 1st joint very setose, 5th and 6th subequal, very long and slender, each much longer than the 7th. Peraeopod 2 with 5th joint nearly twice the combined length of 6th and 7th. Telson about as long as the 2 preceding segments together, two-thirds smoothly cylindric, the post-anal third tapering to truncate apex which carries a pair of small spines. Peduncle of uropods decidedly shorter than telson, probably longer than the rami (which are broken). L. ♀ 13 mm.

Atlantic: Lat. 36° 21' N., long. 23° 31' W., depth 3700 m.

6. **M. josephinae** (O. Sars) 1871 *Diastylis j.*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 1 p. 77 | 1871 *D. j.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 36 t. 15 f. 72—74 | 1879 *D. j.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 56 | 1900 *D. j.*, Zimmer in: Fauna arctica, v. 1 p. 422 | 1905 *D. j.* (? part.), Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 10, 44 | 1912 *Makrokylihdrus j.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 150.

Pseudorostral lobes well produced in front of the small eyeless eyelobe, horizontal, acute, with apical pair of spines. Carapace large and deep, armed on surface with crowded spinules interspersed with spines; especially conspicuous are series formed by 5 pairs of spines commencing on the pseudorostral lobes, and between these rows 4 submedian pairs. Pedigerous segments with transverse dorsal rows of spinules, sides of last segment bluntly extended; pleon segments spinulose all over; telson longer than peduncle of uropods, basal two-thirds cylindric, having in the type specimen about 14 pairs of lateral and 5 ventral spines but none on the tapering end except the apical pair, whereas in an ovigerous ♀ Calman found basal part with no lateral serrations but on each side of post-anal part 10 or 11 small teeth (? *M. serricauda* Scott, p. 117). Antenna 1 slender, 2nd joint the longest. Peraeopod 1 very long. Peraeopod 2, 5th joint considerably longer than 6th and 7th combined. Endopod of uropods appears to be only 2-jointed in young specimens and subequal to the exopod, which with advancing age it exceeds in length, at the same time becoming 3-jointed. L. over 11 mm.

Off Portugal, lat. 38° 10' 30" N., long. 9° 25' W., depth 1412 m; N. of Farö Islands, lat. 48° 50'—67° 7' N., long. 3° 6'—11° 9' W., 629—1326 m; off W. of Ireland, depth 364—699 m.

6. Gen. **Paradiastylis** Calman

1904 *Paradiastylis*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 173
 1905 *P.*, Calman in: Siboga-Exp., nr. 36 p. 20 | 1908 *P.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 181, 182 | 1911 *P.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 366 | 1912 *P.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146, 147.

Telson rather short, with few lateral spines or none. Third maxilliped with exopod only in the male. Third and fourth peraeopods in the female quite devoid of exopods.

3 species.

Synopsis of species:

- | | | | |
|---|---|--|----------------------------------|
| 1 | { | Endopod of uropods with 1 st joint twice as long as 2 nd | |
| | | and 3 ^d combined | |
| 2 | { | Endopod of uropods with 1 st joint not longer than 2 nd | 1. <i>P. breviaudatus</i> |
| | | and 3 ^d combined — 2. | |
| 2 | { | Peduncle of uropods twice as long as pleon segment 6 | 2. <i>P. brachyurus</i> |
| | | Peduncle of uropods thrice as long as pleon segment 6 | |
| | | | 3. <i>P. longipes</i> |

1. ***P. breviaudatus*** (Zimmer) 1903 *Leptostylis breviaudata*, Zimmer in: Zool. Jahrb., Syst. v. 18 vi p. 685 ff. W—Y | 1904 *Paradiastylis* (?) *b.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 175 | 1908 *P. b.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 181.

Pseudorostral lobes horizontal, acute, antero-lateral corners subacute, forming a well marked sinus. Eyelobe small, eyeless, with a pair of denticles, carapace much sculptured, 2 strong teeth in line on the frontal lobe, followed by a deep median depression of the hinder half of the carapace flanked by a pair of keels from which on either side 4 lateral forward curving keels take their origin; hind margin dorsally raised. Pedigerous segment 4 the longest, with a dorsal pair of quadrate impressions, 5th with a postero-dorsal upturned conical process. Pleon segment 5 the longest, telson slightly shorter than the 6th segment, its narrowed distal portion much shorter than the broad proximal, with 1 pair of lateral spines and a small apical pair with pair of setules adjacent. Antenna 1 rather long and slender. Peraeopod 1 long. Exopods of 3^d and 4th pairs slightly developed, the specimen being probably ♂ juv. Peduncle of uropods more than twice as long as the telson, which is rather longer than the endopod; 1st joint of endopod about twice the 2nd and 3^d joints combined, 2nd nearly twice the 3^d, spines of medial margin respectively 5, 2, 1; exopod a little shorter than endopod. Colour brown. L. ♂ juv. about 9 mm.

Japan: Enosima, depth 6—8 m.

2. ***P. brachyurus*** Calm. 1904 *P. brachyura*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 159, 174 t. 5 f. 76—90 | 1905 *P. b.*, Calman in: Siboga-Exp., nr. 36 p. 20 | 1908 *P. b.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 181.

Pseudorostral lobes horizontal, acute, with a pair of divergent spines at apex, antero-lateral corners not produced, rounded, serrate. Eyelobe twice as broad as long, with a pair of denticles, no distinct eye. A median keel bears 2 procurved teeth on front part of carapace, on each side 4 curved ridges run obliquely down and forwards, the front one serrate, the lower edges crossed by a curved row of spines running down and back from pseudorostral lobes towards the lower margin; hind margin dorsally raised. Pedigerous segment 5 without dorsal process. Pleon segments with slight serrate dorso-lateral crests, 5th not longer than 6th, telson a little shorter

than either, slightly narrowed at the base, with a pair of tubercles at about one-third of its length, distal half sharply convergent to exceedingly narrow apex carrying a pair of spinules, with pair of setules adjacent and a second pair higher up. Antenna 1, 2nd joint of peduncle the shortest, principal flagellum 3-jointed, accessory 2-jointed. Antenna 2 of ♀ 3-jointed. Mandibles with about 9 spines in spine-row. Maxilliped 3, 2nd joint much expanded distally, following joints not expanded. Peraeopod 1 not very long, 2nd joint little longer than 6th, which is more than twice as long as the 7th. Peraeopod 2, 2nd joint broad, 3^d a narrow ring, 6th $\frac{3}{4}$ as long as 7th. Following limbs rather stout, 4th joint much longer than 5th. Peduncle of uropods twice as long as 6th pleon segment, a little less than twice the exopod apart from its long apical spine; exopod a little shorter than endopod, of which the 1st joint is a little shorter than 2nd and 3^d combined, spines of medial margin respectively 2, 1, 1. L. ♀ 3.2 mm.

Gulf of Manaar, Cheval Paar, depth 13 m.

3. *P. longipes* Calm. 1905 *P. l.*, Calman in: Siboga-Exp., nr. 36 p. 2, 21 ff. 4a—i | 1908 *P. l.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 181 | 1911 *P. l.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 376.

Near to *P. brachyurus*, but the lateral surface of the carapace has only 3 oblique ridges, no strong dorsal teeth, only a pair of denticles on



Fig. 75.

P. longipes (♀) Calman, maxilliped 3.



Fig. 76.

P. longipes (♂) Calman, maxilliped 3.

the eyelobe and a few in front of the anterior oblique ridge, the paired longitudinal crests on hinder part of dorsal surface finely serrated and more prominent, the space between them deeply hollowed; pedigerous segments 3, 4 indistinctly separated; pleon more slender, lateral serrations more extensive; antenna 1 with 3^d segment longer and more slender; maxilliped 3 with narrower 2nd joint; peraeopod 1 much longer, following limbs more slender, peduncle of uropods thrice as long as 6th segment of pleon. In the adult ♂ the sculpture of the carapace is less strongly marked than in the ♀, the broad eyelobe has 3 large but ill-defined corneal lenses; pleon segments 1—6 quite smooth, pre-anal part of telson subcylindrical, relatively longer than in ♀, a pair of spinules adjacent to the apical pair. Antenna 1 with each flagellum 4-jointed. Maxilliped 3 with 2nd joint much broader than

in ♀ in accord with well developed exopod. Peraeopods 1—4 with 2nd joint greatly expanded and distally produced. Endopod of uropods with 6. 3, 3 spines on the 3 joints respectively, the 3^d joint longer than the 2nd. L. ♀ 3 mm, ♂ 3.5 mm.

Sulu Archipelago, surface to 32 m; Gulf of Siam, depth 9—18 m.

7. Gen. **Leptostylis** O. Sars

1869 *Leptostylis*, G. O. Sars in: *Nyt Mag. Naturv.*, v. 16 p. 343 | 1893 *L.*, T. Stebbing in: *Int. sci. Ser.*, v. 74 p. 311 | 1900 *L.*, G. O. Sars, *Crust. Norway*, v. 3 p. 67 | 1900 *L.*, Zimmer in: *Fauna arctica*, v. 1 p. 427, 431 | 1908 *L.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 181, 182 | 1911 *L.*, Calman in: *Tr. zool. Soc. London*, v. 18 iv p. 366, 367 | 1912 *L.*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 10 v p. 129, 152.

In general agreement with *Diastylis*, but having a shorter telson, with lateral spines few or none; postero-lateral angles of fifth pedigerous segment not acute; eye wanting; first antenna of female with second joint of peduncle the shortest; first peraeopod usually long; third and fourth pairs in female with rudimentary exopods; pleopods of male with short rami; exopod of uropods generally shorter than the endopod.

11 species.

Synopsis of species:

- | | | | |
|----|---|---|--------------------------|
| 1 | { | Uropods with exopod not shorter than the endopod . . . | 1. L. mancus |
| | | Uropods with exopod shorter than the endopod — | 2. |
| 2 | { | Pedigerous segments 1, 2, emarginate in front — | 3. |
| | | Pedigerous segments 1, 2, not emarginate in front — | 5. |
| 3 | { | Lateral ridges enclosing cordiform area on front of carapace | 2. L. antipus |
| | | Carapace without such ridges — | 4. |
| 4 | { | Carapace sparsely hirsute, lower margin acutely serrate | 3. L. ampullaceus |
| | | Carapace closely hirsute, lower margin squarely serrate | 4. L. villosus |
| 5 | { | Uropods with 1 st joint of endopod equal to the 3 ^d — | 6. |
| | | Uropods with 1 st and 3 ^d joints of endopod unequal — | 7. |
| 6 | { | Carapace about thrice as long as pedigerous segments combined | 5. L. crassicauda |
| | | Carapace not nearly thrice as long as pedigerous segments combined | 6. L. borealis |
| 7 | { | Uropods with 1 st joint of endopod shorter than 3 ^d — | 8. |
| | | Uropods with 1 st joint of endopod longer than 3 ^d — | 9. |
| 8 | { | Carapace with lower margin acutely serrate | 7. L. macrurus |
| | | Carapace with lower margin squarely serrate | 8. L. macruroides |
| 9 | { | Uropods with exopod not longer than 1 st joint of endopod | 9. L. productus |
| | | Uropods with exopod much longer than 1 st joint of endopod — | 10. |
| 10 | { | Uropods with 1 st joint of endopod at least as long as 2 nd and 3 ^d combined | 10. L. longimanus |
| | | Uropods with 1 st joint of endopod little longer than 2 nd or 3 ^d | 11. L. gracilis |

1. **L. mancus** O. Sars 1873 *L. manca*, G. O. Sars in: *Svenska Ak. Handl.*, n. ser. v. 11 nr. 5 p. 21 t. 5 f. 24—28 | 1902 *L. m.*, Zimmer in: *Ergeb. Hamburg. Magalh.-Sammeln.*, v. 2 Cumac. p. 8 ff. 11—14 | 1905 *L. m.*, Calman in: *Sci. Invest. Fish. Ireland*; 1904. app. 1 p. 40 | 1908 *Diastylis m.*, Zimmer in: *Ergeb. Tiefsee Exp.*, v. 8 p. 183 | 1912 *Leptostylis mancus*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 10 v p. 153.

Pseudorostral lobes shortly and bluntly produced, forming no distinct antero-lateral corner. Carapace roughly pentagonal in dorsal aspect, antero-lateral margin denticulate; with denticles crossing the frontal lobe and the pseudorostral lobes, from which on either side a subdorsal denticulate crest

ascends surrounding a slightly impressed space with arched centre. Pedigerous segments 1, 2 short, conspicuously narrower than the carapace or the next 2 segments, 5th with postero-lateral corners little extended, blunt. Telson as long as 6th pleon segment, with 1 pair of lateral spines in juv., 2 pairs in adult. Antenna 1 short, 2nd joint of peduncle shorter than 3^d. Peraeopod 1 long and strong, last 3 joints of uniform length. Peraeopods 3, 4 in ♀ juv. with exopods 1-jointed, narrowly conical. Peraeopod 5 well developed in adult, the specific name alluding to the absence of these limbs being no doubt due to observation of a young specimen. Peduncle of uropods considerably longer than the telson, with 3 spines on medial margin of young, 9 on that of adult, rami equal, rather shorter than the telson, endopod with a single spine on each joint at end of the medial margin which in the adult has a continuous brush of fine hairs. L. ♀ adult 10.5 mm, ♀ juv. (uropods included) 7.5 mm.

S. Atlantic, off mouth of R. La Plata, depth 98 m.

2. **L. antipus** Zimmer 1907 *L. a.*, Zimmer in: Zool. Anz., v. 31 p. 223 | 1909 *L. a.*, Zimmer in: Ergeb. Schwed. Südp.-Exp., v. 6 nr. 3 p. 22 t. 7 f. 119—127.

Hirsute. Pseudorostral lobes shortly and bluntly produced; commencing on these and running backwards a pair of carinae enclose a cordiform space on the front of the carapace, of which the hind margin has a sharp carina, continued some way forwards on the sides. Eyelobe minute. Pedigerous segments 1, 2, produced forwards in a submedian pair of tooth-like processes. Telson rather shorter than 6th pleon segment, with 2 pairs of lateral setae on the abruptly narrowed section and a pair of spines on the anal valves. Antenna 1, 2nd joint shortest, 3^d longest, both flagella 3-jointed. Maxilliped 3, 2nd joint nearly twice as long as rest of limb, 3^d slightly wider than 4th. Peraeopod 1 very long, 6th joint longer than 5th, 5th than 7th. Peraeopod 2, 7th joint nearly as long as 5th. Peraeopods 3, 4, with exopods rudimentary. Peduncle of uropods more than thrice as long as the telson, and twice as long as the exopod, with 9 spines on the medial margin, endopod $\frac{2}{3}$ as long as the peduncle, 1st joint much longer than 2nd, 2nd a little longer than 3^d, each with 2 spines on the medial margin. Colour faintly yellowish white. L. ♀ 4—6 mm. Adult ♂ unknown.

S. Georgia, ♂ juv. at 75 m; ♀ at 12—15 m and 252—310 m.

3. **L. ampullaceus** (Lilj.) 1855 *Cuma ampullacea*, W. Liljeborg in: Öfv. Ak. Förh., v. 12 p. 120 | 1865 *Diastylis a.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 175 | 1866 *D. a.*, G. O. Sars in: Nyt Mag. Naturv., v. 15 p. 105 | 1869 *Leptostylis a.*, G. O. Sars in: Nyt Mag. Naturv., v. 16 p. 344 | 1877 *L. a.*, Meinert in: Naturh. Tidsskr., ser. 3 v. 11 p. 178 | 1879 *L. ampullaceus*, S. I. Smith in: Tr. Connect. Ac., v. 51 p. 114 | 1881 *L. ampullacea*, Meinert in: Naturh. Tidsskr., ser. 3 v. 12 p. 497 | 1894 *L. ampullaceus*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 277 | 1896 *L. ampullacea*, G. O. Sars in: Norske Nordhavs-Exp., v. 6 nr. 15 p. 24 | 1900 *L. a.*, G. O. Sars, Crust. Norway, v. 3 p. 70 t. 50 f. 1 | 1900 *L. a.*, Zimmer in: Fauna arctica, v. 1 p. 427, 434 (with synonymy) | 1908 *L. a.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 182.

Pseudorostral lobes shortly and not sharply produced, antero-lateral corners rounded off and coarsely serrate. Carapace broad, with scattered hairs, eyelobe minute. Pedigerous segments 1, 2, produced forwards in a submedian pair of tooth-like processes. Telson shorter than 6th pleon segment, with 1 pair of lateral spinules. Antenna 1, 3^d joint rather shorter than 1st, much longer than 2nd, principal flagellum 3-jointed, accessory 2-jointed. Peraeopod 1 not very long, 2nd joint not so long as rest of limb,

6th longer than 5th which is more than twice the 7th. Peraeopod 2, 7th joint nearly as long as 5th, not twice the 6th. Rudimentary exopods of 3^d and 4th pairs very small, 2-jointed. Peduncle of uropods about twice as long as the telson, not much longer than the endopod, which has 1st joint nearly as long as the subequal 2nd and 3^d combined, spines on the medial margin respectively 3, 1, 1; exopod about $\frac{2}{3}$ as long as endopod. Colour dark yellowish grey or fuscous. L. adult ♀ 6 mm.

Whole coast of Norway, depth 38—188 m; Röddberg, 457—549 m; Sweden and Denmark, 15—30 m; Gulf of Maine, 95—165 m.

4. *L. villosus* O. Sars 1869 *L. villosa*, G. O. Sars in: Nyt Mag. Naturv., v. 16 p. 344 | 1872 *L. v.*, G. O. Sars in: Forh. Selsk. Christian., 1871 p. 270 | 1900 *L. v.*, G. O. Sars, Crust. Norway, v. 3 p. 71, 108 t. 50 f. 2 | 1900 *L. v.*, Zimmer in: Fauna arctica, v. 1 p. 427, 435 | 1901 *L. v.*, T. Scott in: Rep. Fish. Board Scotl., v. 19 p. 275 t. 18 f. 41 | 1908 *L. v.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 182 | 1912 *L. villosus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 153.

Densely hirsute. Pseudorostral lobes shortly and bluntly produced, the steep sides and rounded lower border not acutely serrate but cut into square-topped divisions, machicolated. Carapace large and deep, eyelobe minute. Pedigerous segments produced forwards in a submedian pair of tooth-like processes. Pleon very slender. Telson shorter than the 6th pleon segment, with 1 pair of lateral spinules. Antenna 1, 3^d joint as long as 1st, longer than 2nd. Peraeopod 1 elongate, 2nd joint about $\frac{2}{5}$ of the total length of the limb, 6th joint much longer than 5th which is fully twice the 7th. Peraeopod 2, 7th joint longer than 5th. Rudimentary exopod of 3^d and 4th pairs extremely small, 2-jointed. Peduncle of uropods more than twice as long as the telson, but little longer than the endopod, of which the 1st joint is not nearly equal to the 2nd and 3^d combined, 3^d rather longer than 2nd, spines of medial margin respectively 2, 1, 1, exopod a little longer than first 2 joints of endopod. Colour light fuscous. L. ♀ 4 mm. ♂ unknown.

Norwegian coast, depth 113—188 m; Clyde, 73 m; S. of Shetland Isles, 110—120 m.

5. *L. crassicauda* Zimmer 1907 *L. c.*, Zimmer in: Zool. Anz., v. 31 p. 223.

Sparsely hairy. Carapace inflated, about thrice as long as the steeply sloping group of pedigerous segments, antero-lateral margin denticulate. Telson about as long as 6th pleon segment, with 1 pair of lateral spines. Peraeopod 1 long, 5th and 6th joints subequal, 7th shorter than either. Peduncle of uropods nearly twice as long as the telson, with 6 spines on the medial margin; endopod longer than the exopod, a little shorter than the peduncle, 1st joint longer than 2nd, subequal to 3^d, spines on medial margin respectively 2, 1, 1. Colour white. L. ♂ juv. about 3.5 mm.

Winter Station, German South Pole Exp. (lat. 66° 2' S. long 89° 38' E.)

6. *L. borealis* Stappers 1908 *L. b.*, Stappers in: Arch. Zool. expér., ser. 4 v. 8 notes p. 102 tf. 4, 5 | 1911 *L. b.*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 120 t. 7 | 1912 *L. b.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 153.

Somewhat hirsute. Pseudorostral lobes shortly and obtusely produced, slightly upturned. Carapace much less than thrice as long as the group of pedigerous segments. Pleon slender, telson shorter than 6th segment, with 1 pair of lateral spines. Antenna 1, 3^d joint shorter than 1st, longer than 2nd, flagella very unequal, both 3-jointed. Peraeopod 1 elongate, 2nd joint much shorter than rest of limb, 5th about $\frac{3}{4}$ of 6th and nearly twice 7th. Peraeopod 2, 7th joint nearly equal to 5th and 6th combined. Exopods of 3^d and

4th pairs minute, 2-jointed. Peduncle of uropods rather more than twice as long as the telson and a little longer than the endopod, with 7 or 8 spines on the medial margin; endopod with 1st joint longer than 2nd, equal to 3^d, spines on medial margin respectively 2, 1, 1; exopod shorter than endopod, but reaching beyond its 2nd joint. L. ♀ 4.5 mm.

Off S. coast of Nova Zembla, depth 90 m.

7. **L. macrurus** O. Sars 1869 *L. macrura*, G. O. Sars in: *Nyt Mag. Naturv.*, v. 16 p. 344 | 1870 *L. m.*, G. O. Sars in: *Forh. Selsk. Christian.*, 1869 p. 156 | 1886 *L. m.*, G. O. Sars in: *Norske Nordhavs-Exp.*, v. 6 nr. 15 p. 24 | 1900 *L. m.*, G. O. Sars, *Crust. Norway*, v. 3 p. 69 t. 49 | 1900 *L. m.*, Zimmer in: *Fauna arctica*, v. 1 p. 427, 435 | 1908 *L. m.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 182 | 1912 *L. macrurus*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 10 v. p. 153, 154.

Pseudorostral lobes short, a little upturned. Carapace large, hirsute, more than twice as long as the group of pedigerous segments, in the ♂ having a pair of very conspicuous, coarsely serrated, infero-lateral carinae. Pleon long and slender, 5th segment very long, twice as long as the 6th, telson shorter than the 6th, with 1 pair of lateral spinules, the apical spines long. Antenna 1 ♀, 1st joint longer than 3^d, 3^d than 2nd, flagella 3-jointed, principal flagellum in ♂ 4-jointed, surrounded by brush of setae. Antenna 2 ♂, 5th joint scarcely twice as long as 2nd. Peraeopod 1, 2nd joint scarcely as long as 6th and 7th joints combined, 5th rather more than twice the 7th, 6th thrice. Peraeopod 2, 5th joint a little longer than the 7th. Exopods of 3^d and 4th pairs in ♀ minute, 2-jointed. Pleopod 1 with peduncle distally narrowed. Peduncle of uropods as long as 5th pleon segment, with 9 spines on medial margin; endopod about $\frac{2}{3}$ of peduncle, 1st joint longer than 2nd, shorter than 3^d, spines respectively in ♀ 2, 1, 2, in ♂ 4, 2, 3; exopod reaching middle of 3^d joint of endopod. Colour greyish white. L. about 5 mm.



Fig. 77.

L. macruroides (♂) Stebbing, antenna 1.

Coast of Norway, depth 75—470 m; cold area of N. Atlantic 989 m.

8. **L. macruroides** Stebb. 1912 *L. m.*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 10 v. p. 153 t. 56.

Near to *L. macrurus*, but with the lower margin and the infero-lateral carinae of the carapace in the ♂ machicolated in the anterior half after the fashion of *L. villosus* (nr. 4); hind margin a little upturned, some of the pedigerous segments and first 2 of the pleon with latero-ventral spines, 5th pleon segment not quite twice as long as the 6th, to which the telson is equal, with its distal section more narrowed, but similarly armed as in *L. macrurus*. Antenna 1, principal flagellum 5-jointed, accessory 4-jointed, in each the terminal joint minute. Antenna 2, 5th joint nearly thrice as long as 2nd. Peraeopod 1, 2nd joint long, strongly bent. Peraeopod 2, 5th joint decidedly longer than 7th. Pleopods with peduncle parallel-sided. Peduncle of the uropods about twice and a half as long as the telson, but much less, than twice the endopod, with 11 spines on the medial margin; endopod's 1st joint longer than 2nd, shorter than 3^d, spines on medial margin respectively 4, 3, 2. L. adult ♂ about 5 mm, ♀ unknown.

S. Africa, Cape Natal N. by E. 24 miles, depth 805 m.

9. **L. productus** Norm. 1879 *L. producta*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 65 | 1912 *L. productus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 153.

Pseudorostral lobes short, blunt, slightly upturned. Carapace short, as broad as long, nearly smooth, antero-lateral margin strongly serrate. Telson not longer than 6th pleon segment, nor more than half the 5th, without lateral spines, apical pair rather large. Peduncle of uropods nearly thrice as long as the telson, with 4 spaced spines on the medial margin; endopod nearly as long as peduncle, with spines on its 3 joints respectively 2, 1, 0, exopod as long as 1st joint of endopod, scarcely longer than the lanceolate 3^d. Sex ? ♀.

Off Butt of Lewis, lat. 59° 41' N., long. 7° 34' W., depth 838 m.

10. **L. longimanus** (O. Sars) 1865 *Diastylis l.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 173 | 1869 *Leptostylis l.*, G. O. Sars in: Nyt Mag. Naturv., v. 16 p. 343 | 1879 *L. l.*, S. I. Smith in: Tr. Connect. Ac., v. 51 p. 114 | 1900 *L. longimana*, G. O. Sars, Crust. Norway, v. 3 p. 68 t. 48 | 1900 *L. l.*, Zimmer in: Fauna arctica, v. 1 p. 427, 435 | 1905 *L. l.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 10, 48 | 1908 *L. l.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 182 | 1912 *L. longimanus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 153.



Fig. 78.
L. longimanus (Sars), pereopod 1.



Fig. 79.
L. longimanus
(Sars), pleopod 1.



Fig. 80.
L. longimanus
(Sars), pleopod 2.

Pseudorostral lobes acute, a little upturned. Carapace large and deep, nearly smooth, antero-lateral margin minutely denticulate. Pleon slender,

telson shorter than the 6th segment, with 1 pair of lateral spinules. Antenna 1 of ♀ long, 1st joint longer than 2nd, subequal to 3^d; accessory flagellum much smaller in ♀ than in ♂. Antenna 2 in ♂, 2nd joint subequal to 5th. Peraeopod 1 very long, but 2nd joint scarcely longer than 5th, much shorter than 6th, 6th more than thrice the 7th. Peraeopod 2, 7th joint longer than 5th. Exopods of 3^d and 4th pairs in ♀ 2-jointed. Pleopods with the short 1-jointed rami nearly equal. Peduncle of uropods about equal the 5th and 6th pleon segments combined, longer than the endopod, in which the 1st joint is longer than 2nd and 3^d combined, spines on the medial margin respectively 3, 1, 1 in ♀, 5, 1, 1 in ♂, exopod equal to first 2 joints combined. Colour whitish. L. ♀ 5.5 mm, ♂ about 5 mm.

Coast of Norway, depth 56—188 m; N. America, Casco Bay.

11. *L. gracilis* Stappers 1908 *L. g.*, Stappers in: Arch. Zool. expér., ser. 4 v. 8 notes p. 100 ff. 1—3 | 1911 *L. g.*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 116 t. 5, 6 | 1912 *L. g.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 153

Very near to *L. longimanus*, but peraeopod 1 with 2nd joint longer than 5th, 6th, and 7th joints combined, 6th twice and a half as long as the 7th;

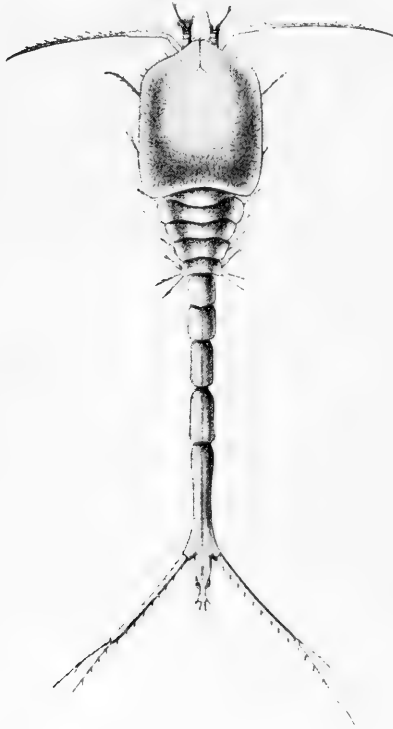


Fig. 81.

L. gracilis (♂) Stappers.

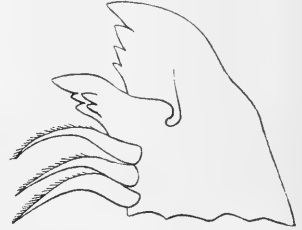


Fig. 82.

L. gracilis Stappers, part of left mandible.



Fig. 83.

L. gracilis Stappers, half of lower lip.

peraeopod 2 with 7th joint as long as 5th; pleopods with the small rami very unequal, the shorter exopod being figured as 2-jointed instead of 1-jointed; in the uropods the 1st joint of the endopod is much shorter than the 2nd and 3^d joints combined, but longer than the 3^d, the 2nd being described

as the shortest, though not so figured. spines on the medial margin respectively 2. 1. 1, the exopod a little longer than first 2 joints of endopod combined. L. ♂ 6 mm, ♀ unknown.

Off S. of Nova Zembla, depth 90 m.

8. Gen. **Ekleptostylis** Stebbing

1912 *Ekleptostylis*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146, 153.

Near to *Leptostylis* (p. 123), but the telson with many lateral spines and in the male having a lobe broadly laminar produced over the base of the terminal section and the anal valves each ending in a little tooth, and peduncle of first antennae with its three joints of equal length.

1 species.

1. **E. walkeri** (Calm.) 1907 *Leptostylis w.*, Calman in: Bull. Mus. Paris, p. 2, 7 ff. 6—9 | 1911 *L. w.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 366 | 1912 *Ekleptostylis w.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 153.

General form and proportions as in *Leptostylis villosus* (p. 125), but beside generic differences pseudorostral lobes a little more salient, teeth of lower margin of carapace less distinctly squared, and its surface carrying only some long scattered setae, that of the ♂ having a longitudinal denticulate carina on each side as in *Leptostylis macrurus* (p. 126). The telson is about $\frac{4}{5}$ th of the length of the 6th pleon segment, in the ♀ having about 14 pairs of lateral spines, with an unusually conspicuous setule issuing from the side of each spine; in the ♂ the spines are larger but only 5 pairs with smaller setules. Peraeopod 1, 2nd joint less than half the total length of the limb, 5th joint $\frac{2}{3}$ ds of 6th, 6th thrice as long as the 7th. Peduncle of uropods nearly twice and a half as long as the telson, with some 23 spines on the medial margin; endopod a little longer than exopod, $\frac{2}{3}$ ds as long as the peduncle, 1st joint nearly twice 2nd, a little longer than 3d, spines on medial margin respectively 7, 2, 1. L. ovigerous ♀ 6.5 mm.



Fig. 84.

E. walkeri (♂) (Calman), telson.

Bay of Biscay, depth probably 100 m.

12. Fam. **Colurostylidae**

1912 *Colurostylidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 143, 146.

Side-plates of pedigerous segment 3 produced backwards. Telson small, blunt, without apical spines. Antenna 1 with accessory flagellum small in male, very small in female. Antenna 2 of female 3- or 4-jointed. Palp of maxilla 1 ending in 2 filaments. Peraeopods 1-4 with exopods in both sexes, but those of the 3d and 4th pairs in the female rudimentary. Only 2 pairs of pleopods in the male. Endopod of uropods 2- or 3-jointed.

2 genera.

Synopsis of genera:

- | | |
|--|-----------------------------|
| { Endopod of uropods 2-jointed | 1. Gen. Colurostylis |
| { Endopod of uropods 3-jointed | 2. Gen. Anchicolurus |

1. Gen. **Colurostylis** Calman

1911 *Colurostylis*, Calman in: Tr. zool. Soc. London, v. 18iv p. 342, 376 | 1912 *C.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10v p. 146.

Side-plates of pedigerous segments 3 and 4 produced backwards. Antenna 2 of female 3-jointed. Maxilliped 3 with apex of 2nd joint a little produced. Peraeopod 2 with 7th joint longer than 6th. Endopod of uropods 2-jointed.

1 species.

1. **C. pseudocuma** Calm. 1911 *C. p.*, Calman in: Tr. zool. Soc. London, v. 18iv p. 342, 376 t. 36 f. 23—36 | 1912 *C. p.*, Calman in: P. U. S. Mus., v. 41 p. 674 | 1912 *C. p.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10v p. 146.

Pseudorostral lobes straight, acute, scarcely raised, sinus obsolete, antero-lateral corner rounded. Carapace pitted. Backward curvature of the side-plates of 3^d pedigerous segment in ♀ separates 3^d peraeopods widely from the 2nd. Length of telson about $\frac{2}{3}$ ^{ds} of preceding segment in ♀, $\frac{3}{4}$ ^{ths} in ♂. Eye without pigment. Antenna 1 in ♀ with 3-jointed flagella, the accessory very small, in the ♂ the 3^d joint of peduncle as broad as long, with brush of sensory filaments, the flagella 4-jointed, the accessory not quite so small as in the ♀. Antenna 2 of ♀ 3-jointed, flagellum in ♂ elongate. Mouth-parts resembling those in *Pseudocuma* (p. 148). Mandible with about 9 spines in spine-row. Maxilliped 3 with about 4 plumose setae on the expanded and slightly produced apex of the 2nd joint. Peraeopod 2 with 7th joint longer than 6th, but not twice as long. Exopods on peraeopods 3 and 4 of ♀ 2-jointed, attached near the base of the 2nd joint and nearly half its length. Rami of pleopods very small. Peduncle of uropods in ♀ more than twice, in ♂ nearly thrice, as long as 6th pleon segment, in the ♀ a little, in the ♂ much, longer than the subequal rami, of which the endopod has a first joint not quite so long as the 2nd, both fringed with setae or spines. L. ♀ 2·3 mm, ♂ 2·7 mm.

New Zealand, Lyttleton Harbour, depth 2—9 m; Akaroa Harbour, depth 11 m

2. Gen. **Anchicolurus** T. Stebbing

1912 *Colurostylis* (?), Calman in: P. U. S. Mus., v. 41 p. 605, 670 | 1912 *Anchicolurus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10v p. 176.

Side-plates of pedigerous segment 3 produced backwards. Antenna 2 of female 4-jointed. Maxilliped 3 with apex of 2nd joint expanded but not produced. Peraeopod 2 with 6th joint longer than seventh. Endopod of uropods 3-jointed.

1 species.

1. **A. occidentalis** (Calm.) 1912 *Colurostylis* (?) *occidentalis*, Calman in: P. U. S. Mus., v. 41 p. 605, 670 ff. 100—112 | 1912 *Anchicolurus o.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10v p. 176.

Pseudorostral lobes meeting in front of the small eyelobe, antero-lateral corners acute in both sexes. Carapace with 4 pairs of oblique ridges. 1st pedigerous segment only dorsally exposed, 2nd with side-plates greatly expanded and marked by an incision of the front margin, those of the 3^d segment overlapping the 2nd side-plates above and produced backward below, 3^d and 4th segments with medio-dorsal carina, side-plates of 4th marked by

a suture, 5th with serrate front margin and dorso-lateral carinae extended into acute postero-lateral teeth. Pleon segments 1 and 2 in ♂ with mid-ventral backward pointing tooth and segments 3—5 each with a pair of ventral articulated spines. Telson carrying distal setae and slightly longer than broad in ♂, but not longer and unarmed in ♀. Eye without pigment in either sex, larger in the ♂, with 3 lenses in the ♀. Antenna 1 with 2nd joint of peduncle the shortest, flagellum 4-jointed in ♀, 5-jointed in ♂, accessory 3-jointed, much smaller in ♀ than in ♂. Antenna 2 of ♀ 4-jointed, 3^d joint large, ovate, serrated, 4th minute, flagellum in ♂ elongate. Maxilliped 3 with apex of 2nd joint expanded, not produced, carrying plumose setae, 3^d joint with comb-like row of spinules. Peraeopod 1 with long 2nd joint, distally narrow; peraeopod 2 with 6th joint longer than seventh, very unusual in this pair; 3^d and 4th pairs with 2-jointed exopod in ♀, conspicuous though small. Peduncle of uropods not quite twice as long as the exopod; endopod about $\frac{3}{4}$ th as long as the exopod, 3-jointed, 1st joint nearly 4 times as long as the other 2 combined, exclusive of the long spiniform process produced far backward from the lower surface of the 3^d. L. ♀ 12 mm or more, ♂ 11.8 mm.

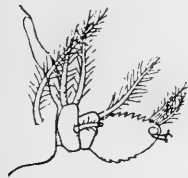


Fig. 85.

A. occidentalis (♀) (Calman), antenna 2.

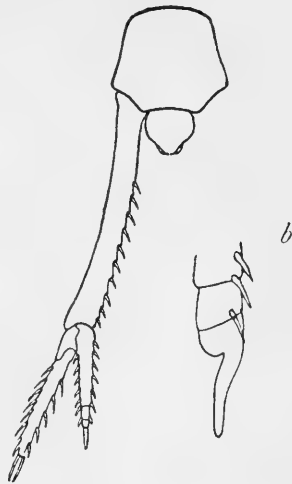


Fig. 86.

A. occidentalis (Calman), telson and uropod, b = tip of endopod of uropod (more magnified).

Off Oregon, lat. 43° 01' 00" N., long. 124° 30' 30" W., depth 64 m; Pacific Grove, California; Monterey-Bay, California, depth 16 m.

Genus incertae sedis, near Colurostylidae

Gen. **Pachystylis** H. J. Hansen

1895 *Pachystylis*, H. J. Hansen in: *Ergeb. Plankton-Exp.*, v. 2 G. c. p. 58 | 1908 *P.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 169, 181.

General form as in *Diastylis* (p. 89) but telson short, cylindrical without apical spines. Eye wanting. Antenna 1 with accessory flagellum short. Mandible with strong molar, few spines in the spine-row on the short distal section. Maxilliped 3 with second joint much dilated distally, third joint short but broader than the fourth. First four peraeopods in the male, only the first two pairs in the female, carrying exopods. Endopod of uropods three-jointed. (Pleopods of male unknown).

1 species.

P. rotundatus H. J. Hansen 1895 *P. rotundata*, H. J. Hansen in: *Ergeb. Plankton-Exp.*, v. 2 G. c. p. 58 t. 7 f. 2—2e.

Pseudorostral lobes moderately produced in front of the eyeless eye-lobe; antero-lateral corners acute in ♀, rounded in ♂. Antenna 1, principal

flagellum 3-jointed in ♀, 2-jointed in ♂ juv., accessory 3-jointed, 1st and 3^d joints very small. Maxilliped 3, 2nd joint with spine-like process at medial apex of 2nd joint, stronger in ♀ than in ♂. Telson in ♂ a little longer than the preceding segment, length scarcely twice the breadth, evenly cylindric, end truncate; in ♀ shorter than preceding segment, narrowing before the middle to a rounded apex carrying about 4 setules. Peduncle of the uropods much longer than the telson, and in the ♀ than the rami, but in the ♂ only a little longer than the exopod, which is only a little longer than the endopod; 1st joint of endopod not so long as the equal 2nd and 3^d joints combined, each of the three having a single lateral spine, the 3^d a long apical one. Colour greyish white. L. ♀ 2.3 mm., ♂ juv. 1.8 mm.

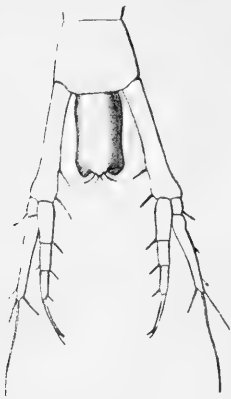


Fig. 87.
P. rotundatus (♂ juv.) Hansen,
telson and uropods.

Mouth of *R. Tocantins*, Brazil.

13. Fam. **Oxyurostylidae**

1912 *Oxyurostylidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 146.

Telson large, acute, without apical spines. Antenna 1 with accessory flagellum small. Antenna 2 of ♀ 4-jointed. Palp of maxilla 1 ending in 2 filaments. Peraeopods 1—4 with exopods in both sexes, but those of the 3^d and 4th pairs in the female very rudimentary. Only 2 pairs of pleopods in the male. Endopod of uropods 3-jointed.

1 genus.

1. Gen. **Oxyurostylis** Calman

1912 *Oxyurostylis*, Calman in: P. U. S. Mus., v. 41 p. 605, 666 | 1912 *O.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146.

Telson with lateral spines along the narrow distal section. Maxilliped 3 with 2nd joint distally widened and produced, 3^d narrowly produced, 4th neither expanded nor produced; with exopod in both sexes. Endopod of the uropods longer than the exopod in the male.

1 species.

1. *O. smithi* Calm. 1912 *O. s.*, Calman in: P. U. S. Mus., v. 41 p. 605, 667 tf. 91—99 | 1912 *O. s.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146.

Pseudorostral lobes meeting horizontally in front of the short broad eyelobe, sinus obsolete, antero-lateral corner not produced. Carapace having the frontal lobe crossed by 2 prominent transverse ridges, followed in the ♀ by 2 others much fainter; these are flanked by a pair of short sinuous ridges, behind which are 2 parallel pairs of large oblique ridges. All 5 pedigerous segments distinct, side-plates of 3^d extended backwards in the ♀, hind corners of 5th extended slightly and bluntly in ♀, strongly and acutely in ♂. Telson about once and a half the length of the preceding seg-

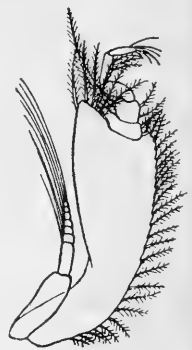


Fig. 88.
O. smithi Calman,
maxilliped 3.

ment in ♀, twice its length in ♂, lateral spines in 6 or 7 pairs, unspined apex acutely upturned. Eye without pigment, visual elements indistinct. Antenna 1 ♀ with 2nd joint of peduncle the shortest, principal flagellum 5-jointed in ♀ with 3-jointed accessory, in ♂ the principal 5- or 6-jointed, with accessory 4-jointed. Peraeopod 2 with the last 2 joints together not quite equal to the preceding joint. Exopods on peraeopods 3 and 4 of ♀ 2-jointed but minute. Peduncle of uropods scarcely longer than the telson, but longer than the rami, which are subequal in ♀, in the ♂ the endopod the longer, armed with many more spines than in the ♀, its 1st joint longer than either of the 2 following joints. L. ♀ 6.6 mm., ♂ 7.3 mm.

U. S. America, Casco Bay; Vineyard Sound, Woods Hole, surface; Punta Rassa, Florida, depth 2 m; Calcasieu Pass, Louisiana.

14. Fam. **Pseudodiastylidae**

1912 *Pseudodiastylidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 146.

Telson long and narrow, with more than 2 apical spines. Antenna 1 large, with very small accessory flagellum. Antenna 2 of female with slender terminal joint. Maxilliped 3 resembling peraeopod 1. Peraeopods 1—4 of female with exopods, those of the 3^d and 4th pairs rudimentary. Uropods elongate. Male unknown.

1 genus.

1. Gen. **Pseudodiastylis** Calman

1905 *Pseudodiastylis* (Sp. un.: *P. ferox*), Calman in: Siboga-Exp., nr. 36 p. 1, 16 | 1908 *P.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 169, 170, 173 | 1912 *P.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146.

Pseudorostral lobes greatly produced. Carapace inflated. Telson narrowly elongate, with three apical spines. Eye wanting. First antenna very large, flagellum elongate, accessory three-jointed but minute. Second antenna of female with terminal joint long, stiliform. Third maxilliped leg-like. Third and fourth peraeopods of female with vestigial exopods.

1 species.

1. ***P. ferox*** Calm. 1905 *P. f.*, Calman in: Siboga-Exp., nr. 36 p. 16 t. 2 f. 15—25 | 1908 *P. f.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 175 | 1912 *P. f.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146.

Integument armed with numerous spicules and spines, many of those on the carapace being especially conspicuous and of complicated structure. Pseudorostral lobes directed slightly upwards obliquely, curved, apically acute, the production about one-third of the total length of the carapace; antero-lateral corners spinose, slightly produced. Carapace oval, dorsal outline strongly arched. The eyeless ocular lobe minute. First pedigerous segment short but completely exposed; second and third segments seemingly immovably united. Telson including the terminal spine nearly as long as the 3 preceding segments combined; except at the base over the anal orifice its width little over a twentieth of its length; 3 lateral pairs of spines are followed by 3 apical spines, of which the central is fully twice as long as the other 2. Antenna 1 about three-fourths as long as the carapace, almost pediform, 1st joint equal to 2nd and 3^d combined, a little shorter than the flagellum, of which the 1st joint is long, the 5th minute; the 3-jointed accessory scarcely one-sixth as long as the 1st joint of the principal. Maxilliped 3 a little

shorter than peraeopod 1 and with a more strongly armed 5th joint, but otherwise in close resemblance. Peraeopod 2 with shorter 2nd, longer 5th joint than in the preceding pair and 6th joint only half as long as the

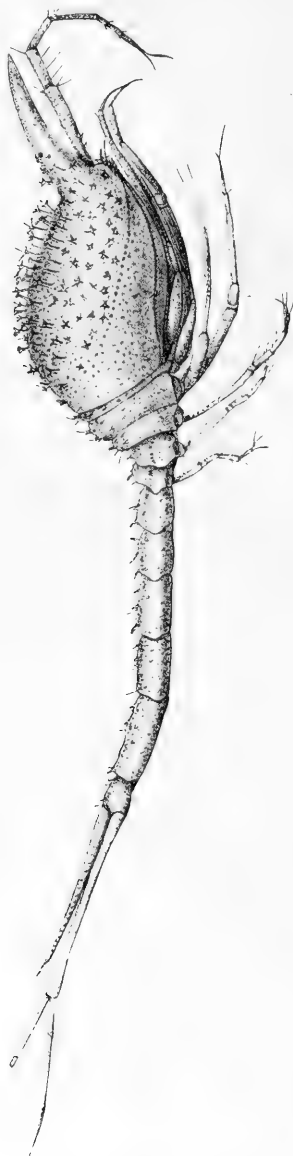


Fig. 89.
P. ferox (♀ juv.) Calman.



Fig. 90.
P. ferox Calman, telson.

straight needle-like 7th. In the 3^d and 4th pairs the exopod is 2-jointed, but extremely minute. Peduncle of uropods a fourth longer than the telson; the rami broken, but the remains indicating a long and slender character. L. ♀ with very small oostegites 14 mm.

Malayan Archipelago: Lat. 5° 40'.7S., long. 120° 45'.5E., depth 1158 m.

15. Fam. **Ekdiastylidae**

1912 *Ekdiastylidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 146, 155.

Telson large, with only 2 apical spines. Antenna 1 with accessory flagellum small. Antenna 2 of female with no elongate joint; flagellum of male very long. Peraeopods 1—4 in male provided with exopods, but only the first two pairs in the female. Only two pairs of pleopods in the male. Endopod of uropods 2-jointed.

1 genus.

1. Gen. **Ekdiastylis** T. Stebbing

1912 *Ekdiastylis*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146, 155.†

With the characters of the Family. The species *E. insignis*, *E. argentatus*, *E. abbreviatus*, *E. fimbriatus*, appear to be in close alliance, with considerable sexual differences.

9 species.

Synopsis of species:

- | | | | |
|---|---|---|--------------------------|
| 1 | { | Carapace strongly sculptured — 2. | |
| | { | Carapace not strongly sculptured — 3. | |
| 2 | { | Peraeopod 2 with 5th joint scarcely as long as 6th and 7th combined | 1. <i>E. sculptus</i> |
| | { | Peraeopod 2 with 5th joint much longer than 6th and 7th combined | 2. <i>E. politus</i> |
| 3 | { | Distal half of telson with fewer than 3 pairs of lateral spines — 4. | |
| | { | Distal half of telson with pairs of lateral spines not fewer than 3 — 5. | |
| 4 | { | Carapace with pair of infero-lateral processes near the front | 3. <i>E. insignis</i> |
| | { | Carapace without such processes | 4. <i>E. mystacinus</i> |
| 5 | { | Carapace with 3 pairs of lateral processes | 5. <i>E. hexaceros</i> |
| | { | Carapace with fewer than 3 pairs of lateral processes — 6. | |
| 6 | { | Carapace with single pair of antero-lateral processes . . . | 6. <i>E. argentatus</i> |
| | { | Carapace without lateral processes — 7. | |
| 7 | { | Carapace coarsely spinose | 7. <i>E. horridus</i> |
| | { | Carapace not coarsely spinose — 8. | |
| 8 | { | Telson of ♀ with 5 pairs of lateral spines | 8. <i>E. abbreviatus</i> |
| | { | Telson of ♀ with 3 pairs of lateral spines | 9. <i>E. fimbriatus</i> |

1. *E. sculptus* (O. Sars) 1871 *Diastylis sculpta*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 1 p. 71 | 1871 *D. s.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 24 t. 1—9 f. 1—49 | 1873 *D. s.*, S. I. Smith in: A. E. Verrill in: Rep. U. S. Fish. Comm., v. 1 p. 554 | 1874 *D. s.*, S. I. Smith & Harger in: Tr. Connect. Ac., v. 31 p. 29 | 1879 *D. sculptus*, S. I. Smith in: Tr. Connect. Ac., v. 51 p. 111 | 1900 *D. sculpta*, Zimmer in: Fauna arctica, v. 1 p. 425 | 1912 *D. s.*, Calman in: P. U. S. Mus., v. 41 p. 605, 657 | 1912 *Ekdiastylis sculptus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146, 155.

Pseudorostral lobes shortly produced in front of the prominent eyelobe, horizontal, antero-lateral corners obtuse. Lower margin of carapace sinuous, finely denticulate in front, hind margin carinate, frontal lobe crossed by 2 straight carinae, from the hinder a short median longitudinal carina passes to join the foremost of 3 pairs of oblique curved lateral carinae by which the much sculptured carapace is divided up into larger and smaller areas. The last

3 pedigerous segments are extended backwards laterally, causing in the ovigerous ♀ a wide separation between the 2nd and 3^d peraeopods; hinder angles of the 5th segment obtuse, more extended in ♂ than in ♀. Telson shorter than peduncle of the uropod, much in ♀, a little in ♂, the slender post-anal part having about 7 pairs of lateral spines in the ♀, a dozen in the ♂. Eye distinct. Antenna 1, 2nd joint of peduncle the shortest. principal flagellum 4-jointed in ♀, 5- or 6-jointed in ♂, accessory 2- or 3-jointed. Antenna 2 of ♀ of five small joints, the last minute. Maxilliped 1 with about a score of branchial elements in twisted series on the epipod. Peraeopod 2 with 5th joint not quite equal to length of 6th and 7th joints combined. Rami of pleopods very short. Peduncle of uropods longer than the rami, its medial margin with about 20 spines in ♀, 30 to 40 in ♂, exopod longer than endopod, of which the 1st joint is shorter than the 2nd, with respectively 7 and 10 spines on medial margin of ♀, 11 and 18 in ♂, but the numbers variable. L. ♀ about 9 mm, ♂ about 10 mm.

N. America, from Gulf of St. Lawrence to Long Island, surface to 347 m.

2. **E. politus** (S. I. Sm.) 1879 *Diastylis p.*, S. I. Smith in: Tr. Connect. Ac., v. 51 p. 108 | 1900 *D. p.*, Zimmer in: Fauna arctica, v. 1 p. 423 | 1912 *Ekdiastylis p.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 155.

Agreeing with *E. sculptus* except that the areolations of the carapace are fewer, less deep, and not extending to the postero-lateral portions. Pedigerous segments 1, 2, in near agreement with *E. sculptus*, 3—5 more nearly with those of *Diastylis rathkii* (p. 98). Telson with slender distal section scarcely longer than the basal, with 6—9 pairs of lateral spines in ♀, 8—10 in the ♂. Peraeopod 2 with 5th joint nearly twice as long as 6th and 7th joints combined. Peduncle of uropods longer than the telson and also than the rami, of which the exopod is the longer; endopod with 4 spines on medial margin of 1st joint in ♀, 4—6 on the lanceolate 2nd, in the ♂ with 24—30 spines, of which 10—12 are on the 1st joint. Colour of ♂ whitish, pellucid, with pink eyelobe. L. ♀ 12 mm, ♂ 14 mm.

N. America, Gulf of St. Lawrence to Vineyard Sound, surface to 347 m.

3. **E. insignis** (O. Sars) 1871 *Diastylis i.*, G. Ö. Sars in: Öfv. Ak. Förh., v. 28 nr. 1 p. 76 | 1871 *D. i.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 34 t. 14 f. 68—71 | 1879 *D. i.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 55 | 1905 *D. i.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 10, 12, 44 | 1912 *Ekdiastylis i.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 155.

Pseudorostral lobes in front of small eyeless eyelobe horizontal, rather long, acute, with 2 apical spinules, antero-lateral corners rounded, serrulate. Carapace large, tumid, laterally reticulate with short rows of tubercular spinules, in front having on each side a strong subventral forward pointing spiniform process. Pedigerous segments narrow, first concealed except dorsally, side-plates of the rest small, irregularly emarginate or divided into spiniform processes, the last 3 spinose at hind margin and having a large pair of dorsal teeth, the 5th postero-laterally bifid. Pleon segments densely aculeate. Telson longer than peduncle of uropods, basal two-thirds broad, subcylindric, with 6 or 7 denticles on each side, the tapering end with single pair of lateral spines close to the apex and a much larger apical pair. Antenna 1 small, last 2 joints of peduncle subequal. Peduncle of uropods much longer than the rami, with few spines on the medial margin; exopod considerably longer than the endopod, in which the 1st joint is longer than

the 2nd, but with spines on medial margin respectively 2 and 3. L. ♀ juv. scarcely 8 mm.

Off Portugal; lat 38° 7' N., long. 9° 18' W., depth 1036 m; W. of Shetland, 4—6 m.

4. **E. mystacinus** (O. Sars) 1887 *Diastylis mystacina*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 9, 60 t. 10 f. 1—3 | 1912 *Ekdiastylis mystacinus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 155.

Pseudorostral lobes shortly and horizontally produced in front of the small rounded eyeless eyelobe, each with apical denticle and strongly but irregularly dentate crest continued as pair of slightly flexuous carinae on front of carapace; no antero-lateral corners: surface of large tumid carapace microscopically spicate, lower margin anteriorly serrate. Pedigerous segments 1 and 2 with front margin denticulate, 3^d with transverse dorsal carina, 4th with pair of medio-dorsal longitudinal serrate carinae, 5th with pair of dorsal denticles; first 3 pleon segments similarly armed; telson for little more than proximal half cylindric, rest slightly tapering to apical pair of stout spines; only 1 lateral pair, with a spinule above on left side of the specimen. Peraeopods 1 and 2 with 2nd joint densely spinose. Peduncle of uropods rather shorter than telson, without spines on medial margin, the endopod about half as long as peduncle, considerably shorter than the exopod, its 2 subequal joints armed respectively with 1 and 2 lateral spines. L. ♀ with marsupium, about 10 mm.

N. Atlantic, lat. 36° 21' N., long. 23° 31' W., depth 3700 m.

5. **E. hexaceros** (Zimmer) 1908 *Diastylis h.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 158, 187 t. 44 (9) f. 93—95 | 1910 *D. h.*, T. Stebbing in: Ann. S. Afr. Mus., v. 6 iv p. 418 | 1912 *Ekdiastylis h.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 155.

Pseudorostral lobes well produced horizontally in front of the small rounded eyeless eyelobe, with 3 submarginal denticles but no apical denticle. Carapace large, with a pair of lateral processes in advance of the eyelobe, a larger pair to the rear of it, and a pair still larger and much wider apart to the rear of the frontal lobe; much of the lower margin serrate, surface scabrous with microscopic denticles. Pedigerous segment 3 with submedian pair of conical bosses, 4th with a pair of dentate longitudinal carinae, 5th with a pair of denticles. Pleon segment 1 begirt with several denticles; the next 2 segments having only 2 pairs, and the 2 following a single pair a-piece. Telson for rather more than half its length cylindric, then tapering with 5 spines on one side and 6 on the other. Colour white, pellucid. L. ♀ with well developed marsupium about 10 mm.

S. Africa, outside the Agulhas Bank, lat. 39° 9' S., long. 18° 32.8' E., depth 565 m.

6. **E. argentatus** (Calm.) 1912 *Diastylis argentata*, Calman in: P. U. S. Mus., v. 41 p. 605, 649 tf. 70—75 | 1912 *Ekdiastylis argentatus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 155.

Pseudorostral lobes horizontally produced in front of the minute triangular eyeless eyelobe, slightly denticulate above and notched at the base; carapace with pitted surface, oblique line of denticles on each side of the pseudorostrum, with small procurved tooth submarginal, about one-third of the length from the front, followed in the ♀ by a serrate carina reaching the hind margin; lower margin anteriorly serrate. Pedigerous segments 2, 3, with side-plates more or less serrate, last 3 segments with some dorsal denticles, 5th segment with postero-lateral lobes rounded in ♀, bifid in ♂.

Some of the pleon segments carrying a few denticles. Telson in ♀ shorter than peduncle of uropods, but equal to it in ♂, with about 6 pairs of lateral spines on the narrowed section in ♀, about 10 in ♂. Antenna 1 with 2nd joint the shortest. Antenna 2 of ♀ with no joints elongate. Maxilliped 3, 2nd joint not distally expanded or elongate. Peraeopod 2 with 2nd joint produced into a curved spiniform tooth. Exopod of uropods about $\frac{2}{3}$ as long as the peduncle, rather longer than the endopod, of which the first joint is subequal to the 2nd in the ♀ (fig.), but much longer than the 2nd in the ♂ (text). Surface of body with a silvery nacreous lustre. L. about 9.5 mm.

Off Chile, lat. 46° 47' 30" S., long. 75° 15' 00" W., depth 112 m.

7. **E. horridus** (O. Sars) 1887 *Diastylis horrida*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 9, 55 t. 9 f. 1—8 | 1908 *D. h.*, Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 158, 184 t. 43 f. 79—89; t. 44 f. 90—92 | 1912 *Ekdiastylis horridus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 155.

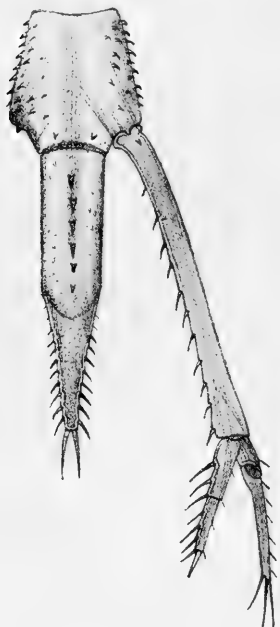


Fig. 91.
E. horridus (Sars), telson and uropod.

Pseudorostral lobes acute, well produced horizontally in front of the rounded eyeless eyelobe, antero-lateral corners wanting. Carapace irregularly grooved (or regularly, Zimmer), armed with many unequal spinules, the whole lower margin denticulate. Pedigerous segments with transverse rows of spinules, side-plates with denticulate margins. Pleon spinulose, sometimes with medio-dorsal row of spines. Little groups of pellucid spots on sides of pedigerous segments and pleon (Zimmer). Proximal half of telson cylindric, the rest tapering with several pairs of lateral spines and a much larger apical pair. Antenna 1 with 2 strong spines at apex of 1st joint and long simple seta near end of lateral margin, 3^d joint shorter than 2nd. Peraeopod 1, 7th joint very slender, much longer than the 6th (G. O. Sars), sometimes shorter or subequal (Zimmer, Calman). Peduncle of uropods a little longer than the telson, rather more than twice as long as the exopod, to which the endopod is nearly equal with 3 and 4 (G. O. Sars) or 4 and 7 spines respectively on medial margin of its subequal 1st and 2nd joints. Colour yellowish white. L. ♀ 11—14 mm.

Kerguelen, off Cumberland Bay, depth 239 m, and Gazelle Harbour, among red Algae.

8. **E. abbreviatus** (O. Sars) 1871 *Diastylis abbreviata*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 1 p. 74 | 1871 *D. a.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 9 nr. 13 p. 30 t. 12 f. 62—64 | 1873 *D. a.*, S. I. Smith in: A. E. Verrill in: Rep. U. S. Fish. Comm., v. 1 p. 554 | 1879 *D. abbreviatus*, S. I. Smith in: Tr. Connect. Ac., v. 51 p. 113 | 1900 *D. abbreviata*, Zimmer in: Fauna arctica, v. 1 p. 420 | 1912 *Ekdiastylis abbreviatus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 155.

Pseudorostral lobes much produced horizontally in front of the small eyeless eyelobe, with serrulate edges; carapace large with finely roughened surface, the whole lower margin rather strongly serrate, a pair of small denticles on hinder part of the frontal lobe and another widely separated

pair much to the rear. Pedigerous segments with few denticles in transverse rows, side-plates of 2nd and 3^d coarsely crenulate, 5th segment with 4 denticles of some size, the hind angles shortly but acutely extended. Pleon segments somewhat nodose and denticulate. Telson longer than peduncle of uropods, its narrowed hinder half carrying 5 pairs of lateral spines. Antenna 1 with 2nd and 3^d joints of peduncle subequal. Peraeopod 2 with 7th joint little longer than 6th. Peduncle of uropods nearly twice as long as the exopod, which is considerably longer than the endopod; 1st joint of the latter rather longer than the 2nd, each with 2 spines on the medial margin, the apical spine as long as the 2nd joint. L. ♀ juv. scarcely 6 mm.

N. America, lat. 39° 54' N., long. 73° 15' W., depth 56—66 m, Cape Ann, 66 m, Casco Bay, 31 m.

9. *E. fimbriatus* (O. Sars) 1873 *Diastylis fimbriata*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11. nr. 5 p. 7 t. 2 f. 4—9 | 1912 *Ekdiastylis fimbriatus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 155.

Pseudorostral lobes apically bent downwards, carapace with only the anterior part of the lower margin serrate, while somewhat above the lower margin each side (in ♂ only) is carinate with a remarkable fringe of teeth encreasing in size to the rear. Pedigerous segments 2—4 have the side-plates pectinately fringed and expanded beyond the 1st and 5th segments. The last has its sides sharply extended backwards and equipped with spinules and plumose setae; the 3^d and 4th pedigerous and (in the ♂) the first pleon segments have 2 longitudinal rows of medio-dorsal backward-directed spinules, and the first 4 pleon segments extend the postero-lateral corners into a sharp tooth, which in the 2nd to the 4th follows a denticulate ridge. Pleon segments in ♀ not dentate. Telson subequal to peduncle of uropods, the narrowed distal half carrying in the ♂ 7 pairs, in the ♀ 3 pairs, of unusually long spines and a rather shorter apical pair. Eyelobe flat, without eye. Antenna 1 in ♂ short, stout, with brush of sensory filaments at base of 4- (or 5-) jointed principal flagellum, accessory 2-jointed; in ♀, 3^d joint of peduncle linear, longer than 2nd, the flagella 3- and 2-jointed. Antenna 2 of ♂ extending beyond the uropods. Peduncle of uropods with 12 spines on medial margin in ♂, 4 in ♀; exopod about $\frac{3}{4}$ ths as long as the peduncle, endopod shorter, with 8 and 7 spines on medial margin respectively of 1st and 2nd joints in ♂, 2 and 3 in ♀. L. ♂ scarcely 6 mm.

S. Atlantic, lat. 23° 41' S., long. 41° 47' W.

16. Fam. Holostylidae

1912 *Holostylidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 146.

Telson large with only 2 apical spines. Antenna 1 with accessory flagellum small. Maxilliped 1 with branchial leaflets numerous. Maxilliped 3 with 2nd joint very elongate and distally produced. Peraeopods 1—4 with exopods in the male, only the first two pairs having them in the female. Only two pairs of pleopods in the male. Endopod of uropods 1-jointed.

1 genus.

1. Gen. *Holostylis* T. Stebbing

1912 *Holostylis*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 146.

With the characters of the family.

2 species.

Synopsis of species:

- { Third maxilliped with 3^d joint much wider than 5th . . . 1. *H. helleri*
 { Third maxilliped with 5th joint much wider than 3^d . . . 2. *H. gayi*

1. *H. helleri* (Zimmer) 1907 *Diastylis h.*, Zimmer in: Zool. Anz., v. 31 p. 221 | 1909 *D. h.*, Zimmer in: Ergeb. Schwed. Südp.-Exp., v. 6 nr. 3 p. 2, 15 t. 6 f. 84—96 | 1912 *Holostylis h.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146.

Pseudorostral lobes much and sharply produced in front of the small eyeless eyelobe; antero-lateral corners subquadrate with denticulate margin stronger above than below. Carapace strongly beset with powerful teeth, of which 2 are especially so on each side of the frontal lobe and one below it; besides there is a close covering of microscopic denticles and the lower margin is denticulate. Pedigerous segments 1 and 2 short, with side-plates beyond width of carapace. All the pedigerous segments and first 3 of pleon have medio-dorsal pairs of warts or teeth, the latter form on the last 3 pedigerous and first 2 pleon segments. On first 5 segments of pleon a median dentate carina encreasing on successive segments. Telson begins laterally dentate, narrows before the middle, with about 9 pairs of lateral spines and a stronger apical pair. Antenna 1 short and weak. Branchial leaflets about 20. Maxilliped 3, 2nd joint nearly thrice the length of rest combined, 5th narrower than 3^d or 4th. Peraeopod 1 with strongly dentate 2nd joint, and a medial distal tooth on 3^d and 4th joints. Peraeopod 2, 5th joint not so long as 6th and 7th combined, 6th little shorter than 7th. Peduncle of uropods about as long as the telson with some 16 spines on the medial margin. Rami about half as long as the peduncle (text), exopod with 1st joint much shorter than 2nd, slightly longer than the 1-jointed endopod which has about 11 spines on its medial margin. Colour yellowish white. L. ♀ about 13 mm.

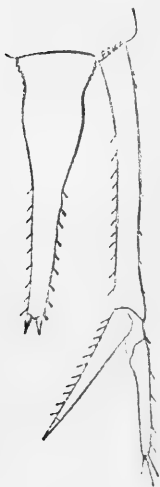


Fig. 92.
H. helleri (Zimmer), telson and uropod.

South Georgia, depth 20—75 m.

2. *H. gayi* (Nic.) 1849 *Cuma g.*, H. Nicolet in: Gay, Hist. Chile, v. 3 p. 220, Crust. t. 3 f. 1, 1a—d | 1912 *Holostylis g.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146.

Pseudorostral lobes somewhat upturned; carapace inflated at the sides, covered with transverse carinae to the rear; telson less than two-thirds the length of peduncle of uropods, with 6 or 7 pairs of lateral spines and a larger apical pair. Maxilliped 3 with 2nd joint twice as long as rest combined, carrying many setae on the dilated and produced apex, 5th joint wider than 3^d or 4th. Peduncle of uropods with 12 spines on medial margin; exopod with 2 equal joints, rather more than half as long as the peduncle; endopod more robust, as long as the telson, 1-jointed, with 7—9 spines on the medial margin. L. ♀ 6.5 mm.

San Carlos, Chiloe, among Fucus.

17. Fam. **Pseudocumatidae**

1878 & 1879 *Pseudocumidae*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 466; v. 4 p. 59 | 1887 *P.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 7 | 1893 *P.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 307, 312 | 1900 *P.*, G. O. Sars, Crust. Norway, v. 3 p. 72 | 1900 *P.*, T. Scott in: Ann. Scott. nat. Hist., v. 9 p. 222 | 1903 *P.*, Zimmer in:

Zool. Jahrb., Syst. v. 18vi p. 694 | 1912 *P.*, Calman in: P. U. S. Mus., v. 41 p. 605 | 1912 *Pseudocumatidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 18v p. 133.

Lobes of pseudorostrum contiguous from the eyelobe to the apex (except in *Schizorhynchus* p. 143). Protuberances on the pedigerous segments when present not spiniform. Pleon slender, smooth; telson small, lamellar, not apically acute or subacute. Eyelobe varying in shape, eye composed of 3 or 2 corneal lenses or quite indistinct. Antenna 1 with accessory flagellum rudimentary. Antenna 2 in female very small, in male well developed. Spines in spine-row of mandible not numerous, molar stout. Epipod of maxilliped 1 scantily furnished with branchial leaflets, at least in the female. Maxilliped 3 with long 2nd joint not apically produced but furnished at the lateral angle with a very long seta. First four pairs of peraeopods in the male provided with exopods well developed, but only first two pairs in the female, the third and fourth pairs in that sex having the exopods represented by more or less distinctly 2-jointed rudiments attached to the 2nd joint. The first two segments of the pleon in the male have small pleopods, the first distinctly 2-jointed, setiferous, the second almost rudimentary, with the 2nd joint fused or diminutive. Uropods with 1-jointed endopod.

6 genera accepted, 1 doubtful.

Synopsis of the accepted genera:

- | | | | |
|---|---|---|-------------------------------|
| 1 | { | Peraeopod 1 with third and fourth joints firmly united | 1. Gen. Petalosarsia |
| | | and the fifth abnormally dilated | |
| | | Peraeopod 1 with third, fourth, and fifth joints normal | |
| | | in size and arrangement — 2. | |
| 2 | { | Pseudorostral lobes not distally contiguous | 2. Gen. Schizorhynchus |
| | | Pseudorostral lobes distally contiguous — 3. | |
| 3 | { | Fifth pleon segment not longer than broad; peduncle | 3. Gen. Caspiocuma |
| | | of uropods very short | |
| | | Fifth pleon segment longer than broad; peduncle of | |
| | | uropods not very short — 4. | |
| 4 | { | Pedigerous segments, some or all, with dorsal pro- | 4. Gen. Pterocuma |
| | | tuberances | |
| | | Pedigerous segments without dorsal protuberances — 5. | |
| 5 | { | Body very slender | 5. Gen. Stenocuma |
| | | Body not specially slender | |
| | | | 6. Gen. Pseudocuma |

1. Gen. **Petalosarsia** Stebbing

1865 *Petalopus* (Sp. un.: *P. declivis*) (non Motschulski 1845), G. O. Sars in: Forh. Selsk. Christian., 1864 p. 196 | 1883 *Petalomera* (non Stimpson 1858), G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 13, 58 | 1893 *Petalosarsia*, T. Stebbing in: Int. sci. Ser., v. 74 p. 308 | 1900 *P.*, G. O. Sars, Crust. Norway, v. 3 p. 77.

In general character agreeing with *Pseudocuma* (p. 148), but the eye feebly developed, first antenna with second joint broadly lamellar and third very small, second antenna of female distinctly two-jointed, and first peraeopods abnormal in structure, the third and fourth joints being firmly united to form a small cup for the very large foliaceous fifth joint, over the broad distal end of which the slender sixth and seventh joints can be folded to produce a subchelate arrangement; the small second pleopod simple.

1 species.

1. ***P. declivis*** (O. Sars) 1865 *Petalopus d.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 197 | 1883 *Petalomera d.*, G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 13, 58 | 1886 *P. d.*, G. O. Sars in: Norske Nordhavs-Exp., v. 6 nr. 15 p. 24 | 1892 *P. d.*, T. & A. Scott in: Ann. nat. Hist., ser. 6 v. 10 p. 206 | 1893 *Petalosarsia d.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 308 | 1894 *P. d.*, A. O. Walker in: Rep. Brit. Ass., v. 64 p. 326 | 1897 *Petalomera d.*, Ehrenbaum in: Wiss. Meeresunters., v. 2 i p. 419 | 1900 *Petalosarsia d.*, G. O. Sars, Crust. Norway, v. 3 p. 77, 108 t. 54 | 1900 *P. d.*, Zimmer in: Fauna arctica, v. 1 p. 428, 437, 441 | 1902 *P. d.*, T. Scott in: Rep. Fish. Board Scotl., v. 20 p. 509 | 1909 *P. d.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 p. 34 | 1911 *P. d.*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 121 t. 6 f. 11, 12 | 1912 *P. d.*, Calman in: P. U. S. Mus., v. 41 p. 675.



Fig. 93.

P. declivis (Sars), pereopod 1.

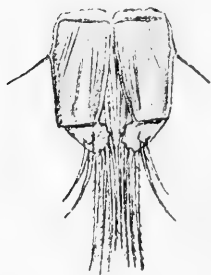


Fig. 94.

P. declivis (Sars), pleopod 1.



Fig. 95.

P. declivis (Sars), pleopod 2.

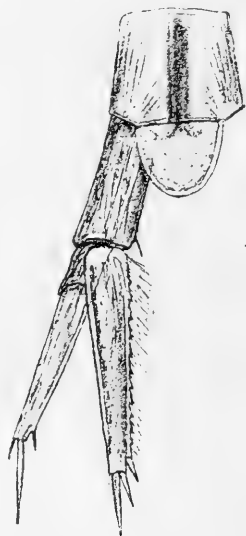


Fig. 96.

P. declivis (Sars), telson and uropod.

Body rather short and compact, integument strongly indurated. Pseudo-rostrum rather prominent, acute, more so in ♀ than in ♂, antero-lateral corners minutely projecting with a little apical denticle. From near this point to the hind margin a pair of strong dorso-lateral carinae traverse the carapace, to which in the ♂ are added a second pair subparallel to the upper pair. The pedigerous segments smooth. Pleon rather shorter than preceding part of the body, telson smooth, broadly semioval. Antenna 1, 2nd joint shorter but broader than the 1st, with medial margin partially serrate, 3^d joint scarcely longer than broad in ♀ and broader than long in ♂. Antenna 2 in ♀ with 2nd joint much narrower than 1st, but nearly as long, flagellum in ♂ reaching

to the end of the body. Peraeopod 1, 2nd joint much curved, not so long as remainder of the limb fully extended, 5th joint twice as long as broad, but its breadth exceeding length of the sixth joint. 2nd peraeopod scarcely more than half as long as the 1st, its 5th joint a little longer than the 4th but shorter than the 7th. Peduncle of uropods little more than half the length of the endopod, which is rather longer than the exopod. Colour uniformly yellow. L. ♀ 4 mm, ♂ nearly 5 mm.

Norway, Lofoten Islands, depth 94—113 m, Coast of Finmark, depth 38—75 m, Spitzbergen; Franz-Josefs Land; Heligoland; N. E. England, depth 68—104 m; Firth of Forth; Irish Sea; off Newfoundland, depth 160 m; U. S. A., off Martha's Vineyard, depth 71 m; Nova Zembla, 90 m.

2. Gen. **Schizorhynchus** O. Sars

1900 *Schizorhynchus*, G. O. Sars, Crust. Norway, v. 3 p. 73.

Pseudorostrum with lobes meeting for a very short space in front of the eyelobe, then being separated by a deep interval; antero-lateral corners more or less quadrate, with serrulate front margin. Eyelobe short and broad, occupied generally by a transverse row of three corneal lenses, of which the central one may be wanting in the female. Peduncle of uropods not longer than the rami.

4 species.

Synopsis of species:

- | | | | |
|---|---|---|----------------------------|
| 1 | { | Integument everywhere spiculate | 1. S. scabriusculus |
| | { | Integument not spiculate — | 2. |
| 2 | { | Uropod with endopod shorter than exopod; telson denticulate | 2. S. eudorelloides |
| | { | Uropod with equal rami; telson not denticulate — | 3. |
| 3 | { | Telson nearly quadrate; eye of female with only 2 lenses | 3. S. bilamellatus |
| | { | Telson semicircular; eye of female with 3 lenses . . . | 4. S. abbreviatus |

1. **S. scabriusculus** (O. Sars) 1894 *Pseudocuma scabriuscula*, G. O. Sars in: Bull. Ac. St.-Pétersb., ser. 4 v. 4 (v. 36) p. 332 t. 12 f. 11—14 | 1900 *Schizorhynchus scabriusculus*, G. O. Sars, Crust. Norway, v. 3 p. 73 | 1907 *Pseudocuma scabriuscula*, Lebediew in: Trudui St.-Peterb. Obshch., v. 381 p. 95.

Body short and stout, integument hard, everywhere scabrous with small projecting spikes. Pseudorostrum produced to widely and deeply separated subacute points, the antero-lateral corners subquadrate, serrate in front. Carapace broadest behind, a little constricted in the middle, with a pair of carinae from tips of pseudorostrum embracing the frontal region, branchial regions tumid. Pedigerous segments not carinate. Pleon short, telson small, semicircular. Eyelobe truncate, with all three corneal lenses distinct. Peduncle of uropods considerably shorter than the subequal rami, endopod with serrulate medial margin. Colour greyish white. L. ♀ 3 mm. ♂ unknown.

Caspian Sea.

2. **S. eudorelloides** (O. Sars) 1894 *Pseudocuma e.*, G. O. Sars in: Bull. Ac. St.-Pétersb., ser. 4 v. 4 (v. 36) p. 330 t. 12 f. 1—10 | 1900 *Schizorhynchus e.*, G. O. Sars, Crust. Norway, v. 3 p. 73 | 1901 *Pseudocuma e.*, S. Zernow in: Annuaire Mus. St.-Pétersb., v. 6 p. 568 | 1907 *P. e.*, Lebediew in: Trudui St.-Peterb. Obshch., v. 381 p. 95.

Body rather stout, integument not very hard, squamose. Pseudorostrum projecting in 2 rounded lobes, narrowly but deeply separated, the antero-

lateral corners nearly rectangular, front margin serrulate. Carapace with a pair of serrulate submedian carinae between the eyelobe and the middle, their hinder part flanked by crests which rising from the sides curve round so as to define medio-dorsally the branchial regions. Pedigerous segments evenly arched above. Pleon not very long. Telson sub-semicircular, the serrulate margin affording 2 decided teeth on each side of the narrowly truncate apex. Eyelobe short and broad, concavely truncate, with 2 small corneal lenses, one at each corner. Antenna 1, 2nd joint longer than 1st or 3^d, which are subequal in length. Peraeopod 2 particularly short and stout. Peduncle of uropods equal in length to exopod, endopod a little shorter, with 5 spinules along the medial margin. Colour whitish. L. ♀ under 5 mm. ♂ unknown.

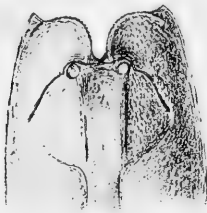


Fig. 97.
S. eudorelloides (Sars)
carapace.

Caspian Sea.

3. *S. bilamellatus* (O. Sars) 1894 *Pseudocuma bilamellata*, G. O. Sars in: Bull. Ac. St.-Pétersb., ser. 4 v. 4 (v. 36) p. 326 t. 10, 11 | 1900 *Schizorhynchus bilamellatus*, G. O. Sars, Crust. Norway, v. 3 p. 73.

Body rather long and slender, integument moderately hard, squamose. Pseudorostrum projecting in 2 thin oval lamellae some distance apart, pointing obliquely upwards, antero-lateral corners nearly rectangular in ♀, more obtuse in ♂, front edge serrulate. Carapace with a pair of submedian carinae, serrulate in ♀, smooth in ♂, running from front of eyelobe to the middle, flanked to the rear by crests which rising from the sides abruptly turn so as medio-dorsally to define the branchial regions. Pedigerous segments not carinate, 2nd and 3^d dorsally short, much expanded at the sides, 4th and 5th dorsally large, 5th with hind corners a little extended backwards. Pleon rather elongate. Telson square, length and breadth being equal, but hind angles rounded off. Eyelobe broad, with front corners rounded, especially in ♂ which has 3 corneal lenses, while the ♀ has only 2, one at each corner of the lobe. Antenna 1, 2nd joint longer than 1st, 3^d than 2nd. Upper lip distally narrowed, distal border emarginate. Peraeopod 1 rather slender. Peraeopod 2 with 5th joint in ♀ a little longer than the 2 preceding joints combined, but in ♂ more than twice as long and more setiferous, the 7th joint in ♂ a little curved and distally armed with 5 retroverted teeth. Peduncle of uropods in ♀ as long as the equal rami, rather shorter than the rami in the ♂, the endopod in both sexes having the medial margin closely fringed with spinules. Colour whitish. L. ♀ 9 mm, ♂ 10 mm.

North Caspian Sea.

4. *S. abbreviatus* (O. Sars) 1897 *Pseudocuma abbreviata*, G. O. Sars in: Annuaire Mus. St.-Pétersb., v. 2 p. 283 t. 14 f. 9—12 | 1900 *Schizorhynchus abbreviatus*, G. O. Sars, Crust. Norway, v. 3 p. 73.

Body short and compact. Pseudorostrum rather short, a deep excavation separating its rounded processes, which laterally lead by a shallow emargination to the serrulate rounded antero-lateral corners. Carapace deeper than wide, slightly narrowed to the rear, without longitudinal carinae and the branchial regions not sharply defined. Pedigerous segments smooth. Pleon short and narrow, telson semicircular. Eye composed of 3 corneal lenses in a transverse row on the short broad eyelobe. Antenna 1,

2nd joint distally expanded, carrying above a dense row of upturned setae. Uropods with peduncle considerably shorter than the subequal rami, endopod with serrate medial margin. L. ♀ 3 mm. ♂ unknown.

North Caspian Sea.

3. Gen. **Caspiocuma** O. Sars

1900 *Caspiocuma*, G. O. Sars, Crust. Norway, v. 3 p. 73.

Integument indurated. Carapace without carinae, its branchial regions greatly inflated. First pedigerous segment narrow and inconspicuous, the rest sloping steeply to the pleon, which is short, depressed, the segments on each side expanding into a shelf-like carina. Eye inconspicuous or absent. Peduncle of uropods very short. Appendages in general not known to differ from those of *Pseudocuma*.

1 species.

1. **C. campylaspoides** (O. Sars) 1897 *Pseudocuma c.*, G. O. Sars in: *Annuaire Mus. St.-Petersb.*, v. 2 p. 286 t. 15 f. 1—3 | 1900 *Caspiocuma c.*, G. O. Sars, Crust. Norway, v. 3 p. 73 | 1907 *Pseudocuma c.*, Lebediew in: *Trudui St.-Peterb. Obshch.*, v. 381 p. 95.

Body short and compact, integument hard and thickly incrustated, with general aspect as in *Campylaspis*. Pseudorostrum short, apically blunt, antero-lateral corners inconspicuous, obtusely rounded off. Front part of carapace in dorsal view much narrower than the broad branchial region. Telson semioval, narrowly rounded at apex. The minute eyelobe showing no trace of pigment or corneal lenses. Uropods short and stout, peduncle not much longer than broad, shorter than exopod, which is shorter than the endopod, about in proportions of 2 : 3 : 4. L. ♀ 3 mm, ♂ unknown.

South Caspian Sea, probable depth 75 m.

4. Gen. **Pterocuma** O. Sars

1900 *Pterocuma*, G. O. Sars, Crust. Norway, v. 3 p. 73.

Pedigerous segments some or all with dorsal protuberances. Telson quadrate, broader than long. Eyelobe triangular or rounded; of the 3 corneal lenses the central one or all three may be evanescent in the female. Rami of uropods subequal.

3 species.

Synopsis of species:

- | | | | |
|---|---|--|-------------------------|
| 1 | { | Pseudorostral lobes very prominent, acuminate | 1. P. rostratum |
| | | Pseudorostral lobes rather short, not acuminate — | 2. |
| 2 | { | Second pedigerous segment with a pair of submedian processes | 2. P. pectinatum |
| | | Second pedigerous segment with a single median process . | 3. P. sowinskyi |

1. **P. rostratum** (O. Sars) 1894 *Pseudocuma rostrata*, G. O. Sars in: *Bull. Ac. St.-Petersb.*, ser. 4 v. 4 (v. 36) p. 313 t. 4 | 1900 *Pterocuma r.*, G. O. Sars, Crust. Norway, v. 3 p. 73 | 1907 *Pseudocuma r.*, Lebediew in: *Trudui St.-Peterb. Obshch.*, v. 381 p. 95.

Body rather stout. Pseudorostrum prominent, acuminate, antero-lateral corners nearly quadrate, serrulate in front. Branchial regions of carapace bounded by an upper and a lower pair of oblique carinae and traversed midway between these by a third pair, an intervening wedge-shaped dorsal

space separating the carinae of one side from those on the other. Pedigerous segments longitudinally carinate, the keel successively encreasing, that of the last segment the most prominent, triangular. Pleon smooth, telson small, broader than long, quadrangular, hind angles rounded off. Eye, 2 patches of pigment in triangular eyelobe. Uropods short and stout, peduncle subequal to the subequal rami, endopod with 1 spinule below the middle of the serrulate medial margin. Many reddish brown stellate flecks. L. ♀ 8 mm, ♂ unknown.

North and South Caspian Sea.

2. *P. pectinatum* (Sowinsky) 1892 *Pseudocuma pectinata*, Sowinsky in: Mém. Soc. Kiew, v. 11 p. 113 | 1894 *P. p.*, G. O. Sars in: Bull. Ac. St.-Pétersb., ser. 4 v. 4 (v. 36) p. 299 t. 1, 2 | 1897 *P. p.*, G. O. Sars in: Annuaire Mus. St.-Pétersb., v. 2 p. 288 | 1899 *P. p.*, Sowinsky in: Bull. Ac. St.-Pétersb., ser. 5 v. 8 p. 376 | 1900 *Pterocuma p.*, G. O. Sars, Crust. Norway, v. 3 p. 73 | 1901 *Pseudocuma p.*, S. Zernow in: Annuaire Mus. St.-Pétersb., v. 6 p. 566, 573 t. 22 f. 19, 20 | 1907 *P. p.*, Lebediew in: Trudui St.-Peterb. Obsch., v. 381 p. 95.

Body rather stout, integument squamose. Pseudorostrum short, slightly upturned, subacute, the antero-lateral corners broadly triangular. Carapace smooth, the branchial regions tumid, gibbous behind in ♀. Of the pedigerous segments the 2nd has a pair of submedian dorsal processes and the side-plates much extended forwards in a rounded lobe, the 3^d has a single medio-dorsal process not large, the long 4th and 5th having each a large, laminar, linguiform, erect, median process. The 5th segment has the postero-lateral corners a little obtusely extended, and in the ♂ fringed with plumose setae. The first 5 pleon segments have a pair of longitudinal carinae, distally raised and rounded; each segment also having the hind border raised, and emarginate on both dorsal and ventral faces, while the sides project at an obtuse angle. Telson very small, rather broader than long, quadrangular. Eye with 3 corneal lenses in a rounded eye-lobe. Antenna 1, 1st and 2nd joints subequal in length, 3^d shorter, flagellum 3-jointed, accessory minutely 1-jointed. Uropods long and slender, rami considerably shorter than peduncle, endopod rather longer than exopod, with serrulate medial margin, proximal half of which in ♂ is densely fringed with spinules. Colour varied with reddish brown arborescent patches. L. ♀ 8, ♂ 8.5 mm.

Black Sea (Sea of Azov); N. Caspian Sea.

3. *P. sowinskyi* (O. Sars) 1894 *Pseudocuma s.*, G. O. Sars in: Bull. Ac. St.-Pétersb., ser. 4 v. 4 (v. 36) p. 312 t. 3 | 1900 *Pterocuma s.*, G. O. Sars, Crust. Norway, v. 3 p. 73 | 1901 *Pseudocuma s.*, S. Zernow in: Annuaire Mus. St.-Pétersb., v. 6 p. 566 | 1907 *P. s.*, Lebediew in: Trudui St.-Peterb. Obsch., v. 381 p. 95.

Pseudorostrum short, slightly upturned, subtruncate, antero-lateral corners much produced, with concave front margin coarsely serrate. Carapace with a pair of sinuous carinae from tips of pseudorostrum embracing the whole frontal region and then with strong curve forming serrate submedian boundaries to the tumid branchial regions. A median carina is figured along the proximal half of the carapace. All the pedigerous segments with medio-dorsal carina, rather low and rounded on the first 3, higher and laminar on 4th and 5th, on the 5th triangular, the carinal edges coarsely serrated. Pleon segments smooth. Telson transversely quadrangular, much broader than long. Eyelobe rounded triangular, the middle corneal lens quite inconspicuous. Antenna 1 as in *P. pectinatum*. Uropods rather short and stout, rami subequal

one to the other and not much shorter than the peduncle. Colour diversified with reddish brown stellate flecks. L. ♀ 11 mm, ♂ unknown.

N. und N. W. Caspian-Sea, Sea of Azov.

5. Gen. **Stenocuma** O. Sars

1900 *Stenocuma*, G. O. Sars, Crust. Norway, v. 3 p. 73.

Body slender, integument little indurated. Pedigerous segments without dorsal carinae or protuberances. Telson quadrate or semielliptic. Eyelobe semicircular, with or without the three corneal lenses. Rami of uropods subequal, the exopod not at all shorter than the endopod.

4 species.

Synopsis of species:

- | | | | |
|---|---|---|---------------------------|
| 1 | { | Carapace with 2 pairs of longitudinal serrated crests | 1. S. diastyloides |
| | { | Carapace without serrated crests — | 2. |
| 2 | { | Peraeopods 3—5 exceptionally stout, pleon exceptionally narrow | 2. S. tenuicauda |
| | { | Dimensions of peraeopods and pleon not exceptional — | 3. |
| 3 | { | Carapace very narrow, pseudorostrum rather short and obtuse | 3. S. gracile |
| | { | Carapace not very narrow, pseudorostrum well produced, subacute | 4. S. graciloides |

1. **S. diastyloides** (O. Sars) 1897 *Pseudocuma d.*, G. O. Sars in: *Annuaire Mus. St.-Pétersb.*, v. 2 p. 279 t. 14 f. 1—8 | 1900 *Stenocuma d.*, G. O. Sars, Crust. Norway, v. 3 p. 73.

Pseudorostrum very prominent, horizontal, subacute, antero-lateral corners quadrate with serrate margin. Carapace with a pair of serrate carinae from ends of eyelobe to about the middle, followed by a pair wider apart, which turn abruptly downwards as they approach the anterior pair. Pedigerous segments 2—4 broadly expanded laterally, 5th with hind corners slightly extended backwards. Telson quadrate, rather broader than long, distal margin slightly convex between two acute points. Eyelobe well developed, but showing no pigment or lenses. Antenna 1, 1st joint slightly curved, stout, as long as 3^d, shorter than 2nd, flagellum very small, 3-jointed. Peraeopod 1, 2nd joint as long as the other joints combined, which is not the case with 2nd joint of peraeopod 2. Rami of uropods rather shorter than the peduncle, the 1-jointed endopod having on the medial margin 9 spines and at the apex 2 that are larger but very unequal. L. ♀ 10 mm, ♂ unknown.

South Caspian Sea, depth 53—170 m.

2. **S. tenuicauda** (O. Sars) 1894 *Pseudocuma t.*, G. O. Sars in: *Bull. Ac. St.-Pétersb.*, ser. 4 v. 4 (v. 36) p. 323 t. 9. | 1900 *Stenocuma t.*, G. O. Sars, Crust. Norway, v. 3 p. 73.

Integument very thin, pellucid. Pseudorostrum short, level, truncate, antero-lateral corners blunt, little prominent. Carapace narrow, without carinae. Free pedigerous segments smooth, last 3 laterally expanded and last 2 laterally tumid. Pleon very narrow, not very long, telson small, semi-elliptic. Eye with 3 corneal lenses. Antenna 1, 1st joint shorter than either of the subequal 2nd and 3^d joints. Peraeopod 1, 2nd joint shorter than the rest combined, 5th much longer than either of the subequal 6th and 7th. Peraeopod 2, 2nd joint much shorter than the rest combined, 6th shorter than 4th,

5th, or 7th, which are subequal in length. Peraeopods 3—5 abnormally stout, 4th joint not much shorter than 2nd in the last 2 pairs, 5th joint short, oval, fringed with strong simple setae on medial margin. Rami of uropods subequal, a little shorter than the peduncle, endopod having on medial margin 3 spines in ♀, 10 (7 in fig.) in ♂. Colour whitish. L. 3.5 mm.

N. W. Caspian Sea.

3. **S. gracile** (O. Sars) 1894 *Pseudocuma gracilis*, G. O. Sars in: Bull. Ac. St.-Pétersb., ser. 4 v. 4 (v. 36) p. 318 t. 7 | 1900 *Stenocuma g.*, G. O. Sars in: Crust. Norway, v. 3 p. 73 | 1907 *Pseudocuma g.*, Lebediew in: Trudui St.-Peterb. Obshch., v. 381 p. 95.

Integument thin, semi-pellucid. Pseudorostrum short, level, apically somewhat obtuse, antero-lateral corners little prominent. Whole body without carinae. 2nd and 3^d pedigerous segments the largest, laterally very broad and laminar, 5th with hind corners evenly rounded. Pleon very long and narrow. Telson small, semi-elliptic. Eye with 3 corneal lenses. Antenna 1, joints 1—3 subequal in length. Peraeopod 1, 2nd joint as long as the rest combined, 5th much longer than either 6th or 7th. Peraeopod 2, 2nd joint rather shorter than the rest combined, 6th shorter than 5th or 7th, 7th distally armed in ♂ with 3 retroverted hooks. Peraeopods 3—5 slender, 4th joint shorter than 5th in the 3^d and 4th pairs. Rami of uropods subequal one to the other and to the peduncle, endopod having medial margin with 8 spines in ♀, ciliated and with 9 spines in ♂. L. 4.5—6 mm. Colour uniformly whitish.

N. W. Caspian Sea.



Fig. 98.
S. gracile (Sars)
pleopod 1.



Fig. 99.
S. gracile (Sars)
pleopod 2.

4. **S. graciloides** (O. Sars) 1894 *Pseudocuma g.*, G. O. Sars in: Bull. Ac. St.-Pétersb., ser. 4 v. 4 (v. 36) p. 321 t. 8 | 1900 *Stenocuma g.*, G. O. Sars, Crust. Norway, v. 3 p. 73 | 1902 *Pseudocuma laticuleata* + *P. graciloides*, S. Zernow in: Annuaire Mus. St.-Pétersb., v. 6 p. 566, 570 t. 22 f. 21—24; p. 570, 577 | 1907 *P. graciloides*, Lebediew in: Trudui St.-Peterb. Obshch., v. 381 p. 95.

More strongly built than *S. gracile*. Pseudorostrum longer and apically subacute. Branchial regions of carapace more distinctly defined. Peraeopod 2 with 7th joint decidedly longer than 5th, instead of scarcely equal to it. Uropods with 6 spines on medial margin of endopod in ♀, 10 in ♂. L. 6 mm. Colour variegated with reddish brown, stellate flecks. Character of spines on which *P. laticuleata* was chiefly based is common to many species.

North Caspian Sea; Sea of Azov.

6. Gen. *Pseudocuma* O. Sars

1858 *Cyrianassa* (Sp. un.: *C. longicornis*) (non Bate 1856), Bate in: Kinahan in: Nat. Hist. Rev., v. 5 P. p. 203 | 1861 *Leucon* (non Kröyer 1846), P. J. Beneden in: Mém. Ac. Belgique, v. 33 [nr. 3] p. 85 | 1865 *Pseudocuma*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 68 | 1879 *P.*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 60 | 1893 *P.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 307 | 1894 *P.* (part.), G. O. Sars in: Bull. Ac. St.-Pétersb., ser. 4 v. 4 (v. 36) p. 298 | 1897 *P.* (part.), G. O. Sars in: Annuaire Mus. St.-Pétersb., v. 2 p. 289 | 1900 *P.*, G. O. Sars, Crust. Norway, v. 3 p. 73 | 1909 *P.*, Stappers in: Cellule, v. 25 p. 368.

Pedigerous segments without carinae or protuberances. Telson semi-circular or bluntly semioval. Eyelobe semicircular or heart shaped with 3

corneal lenses. Second antenna of female very small, one-jointed, with a single apical seta. Peduncle of uropods not very short. Hepato-pancreatic glands with two pairs of lobes.

4 species accepted, 1 obscure.

Synopsis of the accepted species:

- 1 { Carapace without lateral folds 1. *P. cercaroides*
 { Carapace with lateral folds — 2.
- 2 { Pseudorostrum with antero-lateral corners denticulate . . 2. *P. simile*
 { Pseudorostrum with antero-lateral corners not denticulate — 3.
- 3 { Antenna 1 with third joint longer than the second . . 3. *P. longicorné*
 { Antenna 1 with third joint shorter than the second . . 4. *P. ciliatum*

1. *P. cercaroides* O. Sars 1894 *P. c.*, G. O. Sars in: Bull. Ac. St.-Pétersb., ser. 4 v. 4 (v. 36) p. 315 t. 5, 6 | 1900 *P. c.*, G. O. Sars, Crust. Norway, v. 3 p. 73 | 1907 *P. c.*, Lebediew in: Trudui St.-Peterb. Obsch., v. 38 i p. 95.

Body short and stout, integument strongly incrustated, squamose. Pseudorostrum rather prominent, level, subacute; antero-lateral corners small, obtuse in ♀, nearly quadrate in ♂. Carapace without median or lateral longitudinal carinae but with sinuous ridges defining the branchial regions. Pedigerous segments smooth, laterally well expanded, 1st very short, the much narrowed 5th with rounded postero-lateral corners. Pleon narrow, telson very small, nearly semicircular. Eyelobe semicircular, with 3 distinct corneal lenses, pigment rather dark. Antenna 1, 3^d joint shorter than either of the subequally long 1st and 2nd joints. Maxillipeds 2 and 3 and the peraeopods robust. Peraeopod 1, 2nd joint shorter than rest of limb; tip of peraeopod 2 not hooked; in the last three pairs the 4th joint is twice as long as the 5th; the rudimentary exopod of the 3^d and 4th pairs in the ♀ is extremely small but distinctly 2-jointed. Uropods rather short and in ♀ rather stout, peduncle having on medial margin 4 spines in ♀, 5 in ♂, the subequally long endopod with 4 spines in ♀, 9 in ♂ together with fringe of fine cilia, exopod considerably shorter. Colour yellowish. L. 5 mm.

Caspian Sea.

2. *P. simile* O. Sars 1900 *P. similis*, G. O. Sars, Crust. Norway, v. 3 p. 76 t. 53 | 1900 *P. s.*, T. Scott in: Ann. Scott. nat. Hist., v. 9 p. 222 | 1902 *P. s.*, T. Scott in: Rep. Fish. Board Scotl., v. 20 p. 480 | 1903 *P. s.*, Zimmer in: Zool. Jahrb., Syst. v. 18 vi p. 694 | 1905 *P. s.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 36 | 1906 *P. s.*, Gilson in: Mém. Soc. ent. Belgique, v. 12 p. 78 ff. 4, 5, 7, 12, 15 (detailed comparison with *P. longicorné*) | 1909 *P. s.*, Stappers in: Cellule, v. 25 p. 368 t. 1 f. 9a; t. 2 f. 20 | 1909 *P. s.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 ii p. 34.

Similar to *P. longicorné* (nr. 3), but larger and less slender, lobes of pseudorostrum less prominent, antero-lateral corners armed in front with 3 denticles. Sculpture of carapace, eye, antennae, mouth-organs and limbs about as in the species mentioned, but terminal joint of peraeopod 2 in ♂ with 2 denticles and a hook at the apex (Sars), 2 apical hooks and 1 sub-apical (Gilson). Pleopod 1 of ♂ with only 2 setae on medial margin of 1st joint, and pleopod 2 with only 1 spine on lateral margin. Peduncle of uropod longer than the subequal rami, endopod in ♀ having about 6 spines on medial margin, where the ♂ has 12. Telson rather broader than long, truncate in ♀. Colour light. L. ♀ 5 mm, ♂ 5.5 mm.

W. coast of Norway, depth 11–22 m; North Sea; Scotland, E., W., N. E.; W. coast of Ireland, shallow water; off N. E. England, depth 53 m.

3. **P. longicorne** (Bate) 1858 *Cyrianassa longicornis* (J.V. Thompson MS. sp.), Bate in: Kinahan in: Nat. Hist. Rev., v. 5 p. 204 | 1858 *C. l.*, Bate in: J. R. Dublin Soc., v. 2 p. 101 ff. s | 1861 *Leucon cercaria*, P. J. Beneden in: Mém. Ac. Belgique, v. 33 [nr. 3] p. 85 t. 14 | 1865 *Pseudocuma bistriata*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 70 | 1877 *Cuma bella*, Meinert in: Naturh. Tidsskr., ser. 3 v. 11 p. 179 | 1879 *Pseudocuma cercaria*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 62 t. 40—42 | 1880 *Cuma c.*, Meinert in: Naturh. Tidsskr., ser. 3 v. 12 p. 497 | 1893 *Pseudocuma longicornis*, T. Stebbing in: Int. sci. Ser., v. 74 p. 307 | 1895 *P. l.*, H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c. p. 59 | 1900 *P. cercaria*, G. O. Sars, Crust. Norway, v. 3 p. 74, 108 t. 51, 52 | 1900 *P. longicornis*, Zimmer in: Fauna arctica, v. 1 p. 428 (with additional syn.) | 1905 *P. l.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 36 | 1906 *P. l.*, Gilson in: Mém. Soc. ent. Belgique, v. 12 p. 78 ff. 1—3, 6, 8—11, 13, 14 | 1906 *P. l.*, A. M. Norman & T. Scott, Crust. Devon Cornwall, p. 32 | 1909 *P. l.*, Stappers in: Cellule, v. 25 p. 368 | 1909 *P. l.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 311 p. 33.

Body rather slender, especially in ♂. Pseudorostrum prominent, acute, in ♀ more than in ♂. Antero-lateral corners unarmed. Carapace sculptured with 2 pairs of oblique folds from the antero-lateral corners, one curving close to the hind margin, the other in advance of it; free edges of carapace quite smooth. Pedigerous segments smooth. Pleon slender, telson nearly semicircular and slightly serrate in ♀, fully as long as broad at the base and smooth-edged in ♂. Eyelobe somewhat heart shaped with the 3 corneal lenses larger and more distinct in ♂ than in ♀. Antenna 1, 3^d joint shorter than 1st but longer than 2nd, at least in the ♀, flagellum 3-jointed in ♀, 4-jointed in ♂. Antenna 2, the long flagellum in the ♂ variable in its length. Peraeopod 1, 2nd joint about equal in length to rest of the limb, slender 5th joint much longer than 6th, 6th than 7th. Peraeopod 2, 7th joint as long as 5th in ♀, but shorter in ♂ and tipped with a single hook (Sars), 2 apical and 1 subapical (Gilson). The rudimentary exopods of the 3^d and 4th peraeopods in the ♀ are small, but distinctly 2-jointed, 2nd joint longer than 1st. Pleopod 1 of ♂ with 4 strong setae distally on medial margin of basal joint; pleopod 2 with 2 spines distally on lateral margin of that joint. Peduncle of uropods equal to exopod in ♀, shorter in ♂, endopod much longer, with 10 spines on medial margin in ♀, 14 in ♂; apical spine of exopod very elongate; relative dimensions of peduncle and rami variable (Gilson). Colour pale, variegated with dark brown stellate flecks. L. about 4 mm. Gilson describes a form of the ♂, in which the 2nd antenna is short, and the 2nd peraeopod has only 2 hooks at the distal end.

From N. coast of Norway round coasts of Europe to Sicily; depth, surface to 68 m.

4. **P. ciliatum** O. Sars 1879 *P. ciliata*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 71 t. 43 | 1893 *P. ciliatus*, T. Stebbing in: Int. sci. Ser., v. 74 p. 307 | 1900 *P. ciliata*, G. O. Sars, Crust. Norway, v. 3 p. 74.

Near to *P. longicorne*, but more robust, pseudorostrum shorter, apically blunt; antero-lateral corners more produced, almost quadrate; sculpture of carapace the same, but somewhat sharper; 2nd pedigerous segment with broader side-plate; integument of pleon with a peculiar irregular reticulate structure; telson almost rectangular, broader than long, distal margin tending to truncate. Eyelobe and eye and mouth-organs as in *P. longicorne*; antenna 1 short and stout, 3^d joint shorter than 2nd, 2nd than 1st. Peraeopod 1, 5th and 6th joints not slender. Rudimentary exopod of 3^d and 4th peraeopods indistinctly 2-jointed. Peduncle of uropod shorter than the exopod, which is not very much shorter than the endopod; the latter carrying only 2 spinules near the apex but the whole medial margin closely ciliated; apical

spine of exopod not very elongate. Integument somewhat pellucid, with light shade of fawn colour in front, and hinder part of carapace crossed by a deep brown band of stellate spots. L. ♀ 3.5 mm, ♂ unknown.

Mediterranean, Goletta; taken with *P. longicorne*.

P. lagunae Baker 1912 *P. l.*, C. F. Baker in: Rep. Laguna Mar. Lab., v. 1 p. 106 f. 57 A—F.

Juv.? Carapace with strong transverse fold behind the large eyes, its sides with 3 curved ridges; telson as long as peduncle of uropods, ending subacutely. L. 1.5 mm.

Tide-pool, Laguna beach, Orange County, California.

Gen. **Strauchia** Czerniavski

1867 *S.*, Czerniavski in: Syezda Russ. Est., v. 1 p. 64.

Telson very short, unarmed.

S. taurica Czern. 1868 *S. t.*, Czerniavski in: Syezda Russ. Est., v. 1 p. 65 t. 5 f. 1.

It is stated, but probably in error, that the 1st peraeopod is shorter than the 2nd, and that only the 2nd and 3^d peraeopods in the ♀ have exopods. The statements would be more likely to apply to the 3^d maxillipeds and the 1st and 2nd peraeopods. L. about 1 mm.

Black-Sea, off Cape St. John, depth 1.4 m.

18. Fam. **Paraleuconidae**

1912 *Paraleuconidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 156.

Pseudorostrum obliquely upturned in female, horizontal, truncate in male. Telson wanting. Second antenna in male with short flagellum. Mandible broad at the base. Maxilla 1 with single filament to the palp. Branchial leaflets few. Peraeopods 1—3 in female, 1—4 in male with exopods. Only one pair of pleopods in male. Uropods with endopod indistinctly two-jointed.

1 genus.

1. Gen. **Paraleucon** Calman

1907 *Paraleucon* (Sp. un.: *P. suteri*), Calman in: Tr. zool. Soc. London, v. 181 p. 32, 36.

Character of genus included in that of the family for the present.

1 species.

1. **P. suteri** Calm. 1907 *P. s.*, Calman in: Tr. zool. Soc. London, v. 181 p. 32, 36 t. 9 f. 1—20.

Pseudorostral lobes in ♀ directed obliquely upwards, upper margin straight, apically acute, in ♂ horizontal, vertically truncate; antero-lateral corners in ♀ forming a triangular tooth with faint serration of lower margin behind it, in ♂ rounded off. Median carina of carapace in ♀ with a few variable teeth and a large tooth near the hind margin overhanging a preceding depression, in the ♂ a similar arrangement feebler or obsolete. In the ♀ 3 subparallel ridges curve obliquely across the sides of the carapace, the first on the frontal and pseudorostral lobes, the second passing from the median depression towards the antero-lateral corner, the third from the hind margin to the lower margin a little way behind the antero-lateral corners. The first of these is wanting in the ♂. Antenna 1, 3^d joint not shorter

than 2nd, in ♂ decidedly longer, flagellum 3-jointed, accessory 1-jointed. Antenna 2 of ♀ 3-jointed, with 2 plumose setae on 1st joint. Maxilliped 1 with 2 small papilliform branchial sacs. Peraeopod 1, 2nd joint nearly as long as rest of limb. Peraeopod 2 with 3^d joint distinct. The single pair of pleopods very small, the rami minute, 1-jointed, each carrying a long plumose seta. Peduncle of uropods shorter than the endopod, which is shorter than the exopod; endopod indistinctly divided into 2 subequal joints, with about 12 spines on the medial margin and 2 apical spines. L. ♀ 2.9 mm, ♂ 2.4 mm.

New Zealand, Lyttleton Harbour, depth 2—9 m; Akaroa Harbour, 11 m.

19. Fam. **Hemileuconidae**

1912 *Hemileuconidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 133, 156.

Pseudorostrum obliquely upturned in female, horizontal, truncate in male. Telson wanting. Second antenna in male with short flagellum. Peraeopods 1—3 in female, 1—4 in male with exopods. Pleopods wanting in male. Uropods with endopod distinctly two-jointed.

1. Gen. **Hemileucon** Calman

1907 *Hemileucon*, Calman in: Tr. zool. Soc. London, v. 181 p. 32, 37.

Character of the genus included in that of the family for the present. 2 species.

Synopsis of species:

- { Carapace with a single horizontal ridge on each side . . 1. *H. uniplicatus*
- { Carapace with two oblique ridges on each side 2. *H. comes*

1. *H. uniplicatus* Calm. 1907 *H. u.*, Calman in: Tr. zool. Soc. London, v. 181 p. 37 t. 9 f. 21—25.

Pseudorostral lobes straight, in ♀ slightly upturned, obliquely truncate, in ♂ horizontal, vertically truncate; antero-lateral angles produced to a tooth in female, with slight serration in front and behind, in ♂ without produced tooth. Carapace with nearly half of the median carina serrate, a lateral ridge on each side running from the end of the frontal lobe longitudinally and curving upwards to join the hind margin. Antenna 1 with 3-jointed flagellum and one-jointed accessory. Peduncle of uropods rather more than two-thirds the length of the subequal rami, the second joint of the endopod bearing the same proportion to the first joint. L. ♀ 2.6 mm, ♂ 2.35 mm.

New Zealand, Lyttleton Harbour, depth 2—9 m; Akaroa Harbour, 11 m.

2. *H. comes* Calm. 1907 *H. c.*, Calman in: Tr. zool. Soc. London, v. 181 p. 38 t. 9 f. 26—32.

Pseudorostral lobes straight, in ♀ directed obliquely upwards, acute; antero-lateral corners produced into a tooth, with slight serration of the lower margin behind it. Carapace with irregular serration of the median carina anteriorly and a depression towards the rear, an oblique curved ridge crossing the side of the frontal lobe and the pseudorostral lobe to the middle of its lower margin and subparallel to this pair another pair starting from near the median line and approaching but not reaching the antero-lateral tooth. First antenna as in *H. uniplicatus*, second antenna of ♂ with flagellum rather longer than in that species. Peraeopod 2 with 3^d joint distinct.

Peduncle of uropods a little shorter than the endopod, which is a little shorter than the exopod; second joint of endopod rather more than two-thirds as long as the first joint. L. ♀ 2.8 mm, ♂ 2.7 mm.

New Zealand, Lyttleton Harbour; depth 2—9 m.

20. Fam. **Lampropidae**

1878 *Lampropidae*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 462, 465 | 1883 L., G. O. Sars in: Forh. Selsk. Christian., 1882 nr. 18 p. 11 | 1887 L., G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 6, 25 | 1899 L., (restricted), G. O. Sars, Crust. Norway, v. 3 p. 17 | 1900 L., Zimmer in: Fauna arctica, v. 1 p. 414, 432 | 1908 L., Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 158, 159, 169 | 1912 L. (further restricted), T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 133, 158.

Pseudorostral lobes not strongly produced. All the pedigerous segments distinct. Telson well developed, with more than two apical spines. First antennae with both flagella well developed. Second antennae of female more conspicuous than usual. First maxillae with terminal filaments of palp two or only one. First four pairs of peraeopods with exopods, which in the female are rudimentary on the third and fourth pairs. No pleopods in either sex. Uropods with endopod three-jointed.

4 genera.

Synopsis of genera:

- | | | | |
|---|---|---|--|
| 1 | { | Pseudorostral lobes with antero-lateral sinus | 1. Gen. Lamprops |
| | | Pseudorostral lobes without antero-lateral sinus — 2. | |
| 2 | { | Maxilla 1 with single filament to the palp | 2. Gen. Stenotyphlops ¹⁾ |
| | | Maxilla 1 with two filaments to the palp — 3. | |
| 3 | { | Maxilliped 3 with 5th joint not expanded | 3. Gen. Platytyphlops |
| | | Maxilliped 3 with 5th joint expanded | 4. Gen. Bathylamprops ¹⁾ |

1. Gen. **Lamprops** O. Sars

1863 *Lamprops*, G. O. Sars in: Nyt Mag. Naturv., v. 12 p. 239 | 1865 L., G. O. Sars in: Forh. Selsk. Christian., 1864 p. 188 | 1877 *Lampros*, Meinert in: Naturh. Tidsskr., ser. 3 v. 11 p. 187 | 1879 *Lamprops*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 68 | 1880 *Lampros*, Meinert in: Naturh. Tidsskr., ser. 3 v. 12 p. 501 | 1899 *Lamprops*, G. O. Sars, Crust. Norway, v. 3 p. 18 | 1900 L., Zimmer in: Fauna arctica, v. 1 p. 414, 432 | 1905 L., Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 41 | 1908 L., Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 169, 170 | 1912 L., Calman in: P. U. S. Mus., v. 41 p. 605, 629 | 1912 L., T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 159.

Pseudorostral lobes with antero-lateral sinus. Second and third pedigerous segments rather large, with broad side-plates. Telson tapering, truncate at the apex. Eye well developed. Second antenna of male with flagellum of moderate length, more or less prehensile. Second peraeopods not much shorter than first. In the uropods the first joint of the exopod is rather unusually long.

3 accepted species and 2 incerti generis.

Synopsis of accepted species:

Eye present

- | | | | |
|---|---|--|----------------------|
| 1 | { | Of the 5 apical spines of the telson median the shortest | 1. L. fuscata |
| | | Of the 5 apical spines of the telson median the longest — 2. | |

¹⁾ Of these genera, the male being unknown, the systematic position is provisional.

- 2 { Uropods with 1st joint of exopod decidedly shorter than 2nd 2. *L. fasciata*
 { Uropods with the 2 joints of exopod subequal 3. *L. quadruplicata*

Species incerti generis:

Eye wanting

- { Telson shorter than peduncle of uropods, with 5 apical spines *L.?* *comata*¹⁾
 { Telson as long as peduncle of uropods, with only 3 apical
 spines *L.?* *beringi*¹⁾

1. *L. fuscata* O. Sars 1865 *L. f.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 192 | 1884 *L. f.*, J. S. Schneider in: Tromsø Mus. Aarsh., v. 7 p. 54 | 1887 *L. f.*, H. J. Hansen in: Vid. Meddel., v. 39 p. 198 | 1899 *L. f.*, G. O. Sars, Crust. Norway, v. 3 p. 20 t. 11 | 1900 *L. f.*, Zimmer in: Fauna arctica, v. 1 p. 414, 432 | 1912 *L. f.*, Calman in: P. U. S. Mus., v. 41 p. 629.



Fig. 100.

L. fuscata (♀) Sars, antenna 2.



Fig. 101.

L. fuscata (♂) Sars, antenna 2.

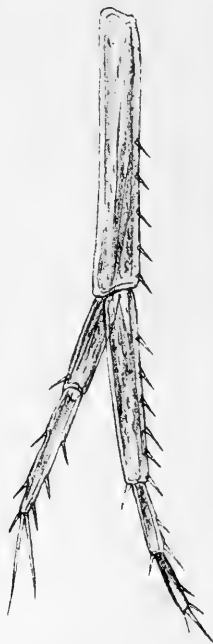


Fig. 102.

L. fuscata Sars, uropod.



Fig. 103.

L. fuscata (♀) Sars, telson.



Fig. 104.

L. fuscata (♂) Sars, telson.

Pseudorostral lobes rather produced, acute, antero-lateral corners almost obsolete. Carapace conically tapering and slightly carinate forwards, sides quite smooth. Pedigerous segments combined about as long as the carapace.

¹⁾ Of these species, the male being unknown, the generic position remains indeterminate.

Pleon with telson scarcely as long as preceding part of the body; telson in ♀ tapering considerably, with 2 pairs of small lateral spines and 5 spines at apex. the middle one the shortest, outer pair longest, divergent; telson in ♂ little tapering, the small lateral spines far apart, of the apical spines the long outer pairs subequal, little divergent. Eye small, distinct. Antenna 2 of ♂ unusually short, plainly prehensile, proximal section of flagellum thick with small hooklike projections of the medial margin. 2nd peraeopod nearly as long as the 1st, its 7th joint considerably longer than the 6th. In peraeopod 3 of ♀ the rudimentary exopod is rather conspicuous. Peduncle of uropods as long as the telson, longer than the exopod, which is much shorter than the endopod. Colour brownish, mottled in front with opaque white. L. ♀ 6 mm, ♂ scarcely 5 mm; Alaskan specimens?, ovigerous ♀ 8.7 mm.

Arctic; Lofoten Islands, Greenland, Franz Joseph Land; depths 6—75 m; off Newfoundland, depth 121 m; Alaska?

2. ***L. fasciata*** O. Sars 1863 *L. f.*, G. O. Sars in: *Nyt Mag. Naturv.*, v. 12 p. 236 | 1865 *L. f.*, G. O. Sars in: *Forh. Selsk. Christian.*, 1864 p. 191 | 1877 *Lampros f.*, Meinert in: *Naturh. Tidsskr.*, ser. 3 v. 11 p. 187 | 1884 *Lamprops f.*, J. S. Schneider in: *Tromsø Mus. Aarsh.*, v. 7 p. 54 | 1886 *L. f.*, A. M. Norman in: *Rep. Fish. Board Scotl.*, v. 4 p. 163 | 1892 *L. f.*, A. O. Walker in: *P. Liverp. biol. Soc.*, v. 6 Tr. p. 104 | 1897 *L. f.*, Ehrenbaum in: *Wiss. Meeresunters.*, v. 21 p. 410 | 1899 *L. f.*, G. O. Sars, *Crust. Norway*, v. 3 p. 19 t. 9, 10 | 1900 *L. f.*, Zimmer in: *Fauna arctica*, v. 1 p. 414, 432 | 1901 *L. f.*, T. Scott in: *Rep. Fish. Board Scotl.*, v. 19 p. 274 | 1902 *L. f.*, T. Scott in: *Rep. Fish. Board Scotl.*, v. 20 p. 510 | 1905 *L. f.*, Calman in: *Sci. Invest. Fish. Ireland*, 1904 app. 1 p. 41.

Pseudorostral lobes obtuse, scarcely projecting beyond the blunt antero-lateral corners. Carapace with 3 pairs of obliquely curved ridges crossing the branchial regions. First 4 pedigerous segments combined longer than the carapace. Pleon with telson longer than preceding part of the body. Telson nearly twice as long as 6th pleon segment, rapidly tapering, with a single pair of lateral spines, 5 apical spines, of which the divergent outer pair and the central spine are much larger than the intermediate pair. Eye conspicuous, dark red. Antenna 2 of ♂ about half the length of the body, not so conspicuously prehensile as in *L. fuscata*. Peraeopod 1, 7th joint shorter than 6th. Peraeopod 2, 7th joint subequal to 6th, 5th equal to both combined. Peraeopods 3, 4, 5 densely setiferous. Peduncle of uropods scarcely longer than the telson or the exopod, in which the first joint is rather shorter than the second; the endopod is rather longer, its 1st joint longer than the 2nd and 3^d combined. A broad band of dark brownish violet crosses the branchial regions and is succeeded by other transverse bands. L. ♀ 9 mm, ♂ considerably less.

Norway, N. to Vadsö, Kattegat, Heligoland, E. and W. Scotland, Irish Sea; at no great depths.

3. ***L. quadriplicata*** S. I. Sm. 1879 *L. q.*, S. I. Smith in: *Tr. Connect. Ac.*, v. 51 p. 118 | 1893 *L. q.*, T. Stebbing in: *Int. sci. Ser.*, v. 74 p. 309 | 1900 *L. q.*, Zimmer in: *Fauna arctica*, v. 1 p. 415, 432 | 1912 *L. q.*, Calman in: *P. U. S. Mus.*, v. 41 p. 628.

Pseudorostral lobes truncate, not produced beyond the slightly projecting, obtuse, sometimes denticulate, antero-lateral corners. Carapace with 4 pairs of very distinct, arcuate, nearly parallel ridges, the first from antero-lateral corners to the sides of the frontal lobe, the second extending behind that lobe from the lower margins, the third and fourth similarly, the fourth

nearly touching the hind margin above. First 4 pedigerous segments combined subequal in length to the carapace. Pleon with telson longer than preceding portion of the body. Telson as long as 5th and about twice as long as 6th pleon segment, with 2 or 3 pairs of lateral spines, and 5 apical of similar size, only the median spine a little the largest. Antenna 1, 1st joint of principal flagellum only a little shorter than the accessory. Peraeopod 1 not very elongate, 5th, 6th, and 7th joints subequal in length. Peraeopod 2, 6th and 7th joints subequal, 5th joint subequal to both combined. Peraeopods 3, 4, with 3 or 4 plumose setae on apex of the rudimentary exopod in ♀, and others on the 1st joint of it, the exopods in the ♂ fully developed. The ♂ without pleopods, in accord with the generic character. Peduncle of uropods as long as the telson and also subequal to the endopod, the exopod a little shorter, its 2 joints subequal; medial margin carrying 10 spines on peduncle, 16, 5, 2 on the 3 joints respectively of the endopod. L. ♀ 9 mm, ♂ not fully mature 8.5 mm.

Gloucester Harbor, Massachusetts, 13—18 m, and Casco Bay, surface; off Newfoundland, depth 67 m.

L.? comata Zimmer 1907 *L.? c.*, Zimmer in: Zool. Anz., v. 31 p. 373.

Pseudorostral lobes very short, obtuse. Carapace dorso-ventrally somewhat depressed; a depression between the eyelobe and the frontal lobe. Pedigerous segments combined shorter than the carapace. Pleon decidedly longer than preceding part of the body. Telson about three-fourths as long as peduncle of uropods, with 5 pairs of small spines on the distal third, and 5 very strong apical spines. Eye entirely wanting. Antenna 1 almost three-fourths as long as the carapace, 1st joint of principal flagellum only a little shorter than the accessory. Peraeopod 1 elongate, 6th joint rather longer than 5th. Peraeopod 2, 7th joint twice as long as 6th and half as long as 5th. The 2-jointed exopod of 3^d peraeopod more strongly developed than is usual in the ♀ of this family. Peduncle of uropods nearly as long as 5th pleon segment; endopod with close row of unequal spines on the medial margin. Colour white. L. about 7 mm. ♂ unknown.

Antarctic: Lat. 65° 15 S., long 80° 12' E., depth 3423 m.

L. (?) beringi Calm. 1912 *L. (?) b.*, Calman in: P. U. S. Mus., v. 41 p. 605, 630 ff. 27, 28.

Like *Hemilamprops uniplicata* (p. 58) in having a single pair of lateral ridges on the carapace, but with well marked sinus to the pseudorostral lobes defined by acutely produced antero-lateral angle; telson, as long as peduncle of uropods with 5 or 6 spines on each side not symmetrically arranged, and 3 apical spines, the median the longest; 1st peraeopod not very elongate, with 5th, 6th, and 7th joints subequal; exopod of uropods only slightly shorter than endopod, with its 1st joint scarcely half as long as the 2nd. L., ovigerous ♀, 12.7 mm. ♂ unknown.

Bering Island.

2. Gen. *Stenotyphlops* T. Stebbing

1912 *Stenotyphlops*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 159, 162.

Carapace narrow, eyelobe without visual elements, pleon slender, telson carrying 3 apical spines. First antenna with both flagella elongate. Second antenna of female four-jointed. Palp of first maxilla with a single filament.

First maxilliped with terminal joint peculiarly widened at the base. First and second pereopods of the female with exopods, third and fourth pairs with exopods very rudimentary. Fifth pereopods apparently wanting.

1 species.

1. *S. spinulosa* Stebb. 1912 *S. spinulosus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 162 t. 60.

Surface spinulose. Pseudorostral lobes slightly up-turned, without sinus of antero-lateral margin. Carapace narrowly oval, with median keel running for some distance backwards from the small eyeless eyelobe, and behind the middle of the carapace's length flanked by a pair of raised ridges. Fifth pedigerous segment not wider than the pleon. Telson about $\frac{4}{7}$ ^{ths} of the peduncle of the uropods, the margins serrate and behind the middle having 3 pairs of lateral spines. First antenna with 1st joint much longer than 2nd and 3^d combined, principal flagellum 4-jointed, accessory 3-jointed, about $\frac{4}{5}$ ^{ths} of principal. Second antenna 4-jointed, the slender 4th joint as long as the stout 1st. Third maxilliped with 2nd joint not distally expanded and 5th also narrow. Pereopod 2 slender, 2nd joint slightly shorter than rest of limb, needle-like 7th about thrice as long as 6th, both combined scarcely as long as the well spined 5th. Third and fourth pereopods much shorter than the second, their 2nd joint carrying a minute 2-jointed exopod. Of fifth pereopods no trace. Margins of uropods serrulate, endopod $\frac{4}{5}$ ^{ths} as long as the peduncle, its 1st joint about twice the 2nd and 3^d combined, spines on the medial margin respectively 10, 3, 1; the exopod, with 1st joint little more than $\frac{1}{5}$ ^{ths} of the 2nd, reaches nearly to the middle of the endopods 3^d joint. L. 12 mm.

S. Africa, Cape Point E. by N. 29 miles.

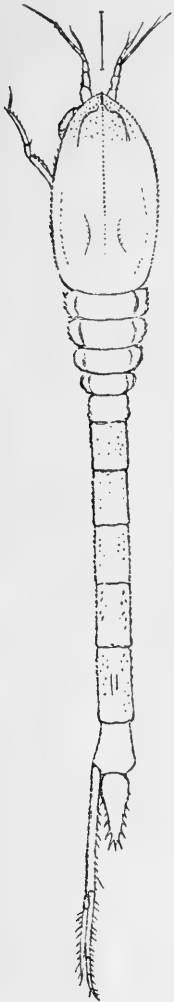


Fig. 105.

S. spinulosa (♀)
Stebbing.



Fig. 106.

S. spinulosa Stebbing,
maxilla 1.

3. Gen. *Platytyphlops* T. Stebbing

1912 *Platytyphlops* (Sp. typ.: *P. peringueyi*), T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 158, 159.

Carapace broad, depressed, without antero-lateral angles. Pleon long and slender. Telson with three apical spines. Eye wanting. Antenna 1 with both flagella well developed. Antenna 2 of female 4-jointed. Palp of first maxilla with two filaments. First and second pereopods in female with exopods, third and fourth pairs with microscopic two-jointed rudiments. Fifth pereopods rudimentary. Pleopods wanting in both sexes.

2 species.

Synopsis of species:

- { Carapace with pair of conspicuous dorsal processes . . . 1. *P. peringueyi*
 { Carapace without conspicuous dorsal processes 2. *P. orbicularis*

1. *P. peringueyi* Stebb. 1912 *P. p.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 159, 162 t. 58, 59.

Pseudorostral lobes short, upturned. Carapace rounded oval, rather longer than broad, the carinate margin fringed with pellucid scales, ocular lobe small, triangular, frontal lobe broad, medio-dorsal line arched, finely serrate to beyond the middle of the carapace, which in its hinder part has a submedian pair of carinae rising into thin round-topped processes. Pedigerous segments combined equal about half the length of the carapace, the first shorter and much narrower than the second, the second and third depressed and spread out at the sides, though still much narrower than the carapace, the fifth not wider than the pleon, which is much longer than the preceding part of the body. Telson much longer than the preceding segment,

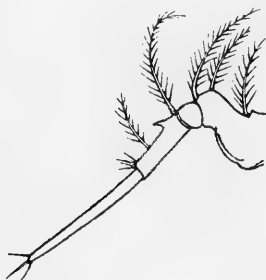


Fig. 107.
P. peringueyi (♀) Stebbing, antenna 2.

shorter than the peduncle of the uropods, with anal opening near the base, thence narrowing to the truncate 3-spined apex; 3 pairs of spines are spaced on the margins of the hinder half, the largest pair being subapical. Antenna 1, peduncle rather longer than the flagella, its 1st joint more than twice as long as the 2nd, 3^d a little shorter than 2nd, principal flagellum 5-jointed (or in ♀ perhaps 6-jointed), accessory 4-jointed. Antenna 2 of ♀ with 3 plumose setae on 1st joint, which is rather large, but much shorter than the very slender 4th, 3^d with tooth near the base. Upper lip emarginate. Numerous spines in spine-row of mandibles. Filaments of palp of maxilla 1 very unequal. Epipod of maxilliped 1 with 7 unequal branchial leaflets. First peraeopods reaching much beyond carapace, second joint in first and second pairs shorter than following joints combined, 6th joint longest of these in the first pair but very short in the second; third and 4th pairs alike in ♂ and ♀, except for minuteness of exopods in the ♀. Fifth peraeopods pellucid, vestigial, but the 2nd joint, as in the 2 preceding pairs, longer than the following joints combined. Peduncle of uropods a little longer than the endopod, the 3 joints of which have on the medial margin 8 or 9, 3 or 4, and 2 spines respectively; the exopod is a little longer than the telson, which equals the first 2 joints of the endopod. L. about 10 mm.

South Africa, Cape Point E. by N. 29 miles, and 81° E. 32 miles.

2. *P. orbicularis* (Calm.) 1905 *Platyaspis o.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 12, 42, 43 t. 5 f. 77—81 | 1912 *Paralamprops o.*?, Calman in: P. U. S. Mus., v. 41 p. 631 tf. 29—39 | 1912 *Platytyphlops o.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 144, 161.

Like *P. peringueyi*, but carapace rather broader than long, 1.75 long by 1.8 mm broad; a pair of low submedian carinae on the hinder half; 1st pedigerous segment larger than those which follow it; antenna 1 with both flagella 4-jointed; antenna 2 ♀ with 2 plumose setae on the small 1st joint, 4th joint narrowly fusiform; first peraeopods (as figured) not longer than the carapace. The specimen defective beyond the 1st pedigerous segment. Complete specimens, of which the specific identity is rather uncertain,

have breadth of carapace a little less than the length, with minute teeth along from eyelobe to beyond the middle, with no paired ridges to the rear; telson only a little longer than the 6th pleon segment; antenna 1 with principal flagellum 6- or 7-jointed, accessory 4-jointed; antenna 2 ♀ as in *P. peringueyi*, but 3^d joint without tooth, 4th more than twice as long as 3^d; peraeopods as in *P. peringueyi*; endopod of uropods about as long as the peduncle. L. ♀ with developing oostegites 16 mm.

Atlantic coast of N. America, S. of Labrador, depths between 600 and 1000 m; W. coast of Ireland, 77 miles W. N. W. Achill Head, county Mayo, depth 698 m.

4. Gen. **Bathylamprops** Zimmer

1908 *Bathylamprops* (Sp. un.: *B. calmani*), Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 173.

Pseudorostral lobes acutely and much produced. Telson well developed. Eye wanting. Antenna 1 probably long. Antenna 2 of female with terminal joint elongate. Palp of maxilla 1 with two filaments. Epipod of maxilliped 1 with few (5) branchial sacs. Maxilliped 3 with 5th joint much widened.

1 species.

1. *B. calmani* Zimmer 1908 *B. c.*, Zimmer in: *Ergeb. Tiefsee-Exp.*, v. 8 p. 173 t. 40 f. 60—62; t. 41 f. 63—70.

Integument thin, brittle, squamose. Pseudorostral lobes produced to about one-fifth of the length of the carapace; antero-lateral corners obsolete. Ocular lobe forming a narrow equi-lateral triangle, without visual elements. Carapace about as long as the pleon without its telson, wrinkled by numerous denticulate swellings, chiefly transverse but in part connected by others at angles with them. First pedigerous segment not elongate. Pleon segments 1—5 with 3 longitudinal denticulate swellings. Antenna 2, 1st joint nearly spherical, with plumose seta on a conical process, 4th nearly as long as preceding 3 joints combined. Peraeopod 1 slender, rather long, 5th joint slightly longer than 6th. Peduncle of uropods very slender, subequal to pleon segments 4—6 combined. Colour white. L. ♀ at least 13 mm. ♂ unknown.

Lat. 6° 12' S., long. 41° 17' E., depth 2959 m off Dar-es-Salaam.

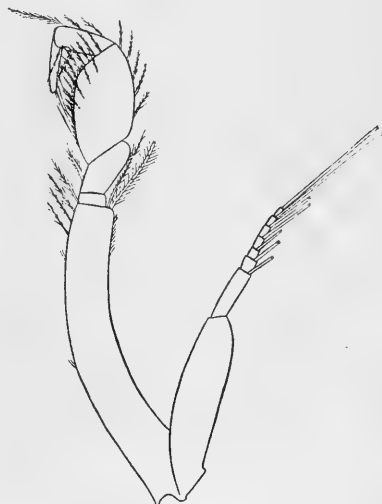


Fig. 108.

B. calmani (♀ juv.) Zimmer, maxilliped 3.

21. Fam. **Dicidae**

1910 *Dicidae*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 6 iv p. 415 | 1912 *D.*, Calman in: *P. U. S. Mus.*, v. 41 p. 608 | 1912 *D.*, T. Scott in: *Sci. Invest. Fish. Scotl.*, 1911 nr. 1 p. 5 | 1912 *D.*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 10 v p. 133, 147.

Telson long, cylindric to the triangular apex, without apical spines. Exopods on first four pairs of peraeopods at least of the male. Uropods with three-jointed endopod, not longer than the exopod.

1 genus.

1. Gen. **Dic** T. Stebbing

1910 *Dic*, T. Stebbing in: Ann. S. Afr. Mus., v. 6 iv p. 415 | 1912 *Diastylis* (part.), Calman in: P. U. S. Mus., v. 41 p. 608 | 1912 *Dic*, T. Scott in: Sci. Invest. Fish. Scotl., 1911 nr. 1 p. 5 | 1912 *D.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 147.

Sixth segment of pleon very short; telson very much longer than that segment and longer than the peduncle of the uropods.

2 species.

Synopsis of species:

- { Uropods with exopod and endopod equal in length . . . 1. **D. calmani**
- { Uropods with exopod much longer than the endopod . . . 2. **D. tubulicauda**

1. **D. calmani** Stebb. 1910 *D. c.*, T. Stebbing in: Ann. S. Afr. Mus., v. 6 iv p. 416 t. 46 B, 47.

Pseudorostral lobes down bent. Carapace in front with several obliquely transverse markings. Third and fourth pedigerous segments dorsally coalesced.



Fig. 109.

D. calmani Stebbing, maxilliped 3, left and right.

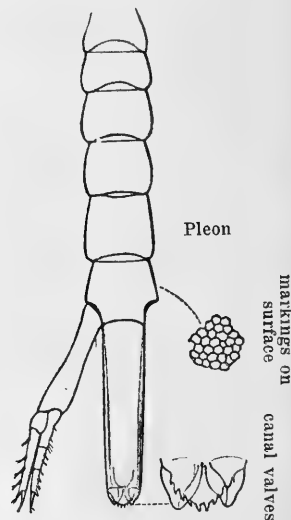


Fig. 110.

D. calmani Stebbing.

Telson as long as the 3 preceding segments combined, apex cut into 10 denticles. Antenna 1, principal flagellum small, 4-jointed, accessory minute, 2-jointed. Antenna 2, flagellum 5-jointed, the specimen no doubt not fully adult. Mandible with numerous spines. Maxilla 1 with 2 filaments. Maxilliped 3, 2nd joint distally dilated, 3^d of unusual size and shape, the broadly rounded end nearly reaching distal end of the 5th. Peraeopod 1, rather long, 2nd pair not more than a third as long, but with stout 2nd joint. Exopods of 3^d and 4th pairs 2-jointed, shorter than the 2nd joint, probably not fully developed. Peraeopod 5 short. Peduncle of uropods more than $\frac{2}{3}$ as long as the telson, longer than the exopod, which is equal to the endopod; of this the spines on medial margin of the 3 joints are respectively 4, 3, 3. L. ♂ not fully adult, about 5 mm. A specimen 2.75 mm long, is without 5th peraeopod.

S. Africa lat. 32° 53' 30" S., long. 28° 11' 00" E., depth 75 m.

2. **D. tubulicauda** (Calm.) 1905 *Diastylis t.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 10, 46 t. 5 f. 82—86. | 1910 *Dic ? t.*, T. Stebbing in: Ann. S. Afr. Mus., v. 6 iv p. 416 | 1912 *D. t.*, T. Scott in: Sci. Invest. Fish. Scotl., 1911 nr. 1 p. 4 t. 1 f. 6 | 1912 *D. t.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 147.

Pseudorostral lobes acute, prominent, horizontal. Carapace spinulose. Pedigerous segments 3, 4, quite distinct one from the other. Telson as long as the 4 preceding segments combined, apex sharply triangular, with 2 apical spinules. Peraeopods 3, 4, very long. Peraeopod 5 quite wanting, probably a juvenile character. Peduncle of uropods $\frac{2}{3}$ ds as long as telson, much less than twice the exopod, but considerably more than twice the endopod, which has 2, 1, 1 spines respectively on medial margin of the 3 joints, and 2 apical spines. L. juv., 5.4 mm, sex doubtful.

Ireland, County Mayo, 77 miles W. N. W. of Achill Head, depth 699 m; lat. 59° 25' N., long. 70° 33' W., depth 1100 m.

22. Fam. **Gynodiastylidae**

1912 *Gynodiastylidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 146.

Telson of moderate size, with no apical spines or 2 that are rudimentary. Accessory flagellum of 1st antenna very small. Second antenna small in both sexes. Palp of maxilla 1 with 2 filaments. Branchial leaflets few or wanting. Maxilliped 3 without exopods in the female. Peraeopods 1—4 or only 1st and 2nd in the male with exopods, and only 1st and 2nd in the female. No pleopods in the male. Uropods with the endopod two-jointed or simple.

1 genus.

1. Gen. **Gynodiastylis** Calman

1911 *Gynodiastylis*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 312, 366 | 1912 *G.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146.

At present with the characters of the family.

4 species.

Synopsis of species:

- | | | | |
|---|---|---|--------------------------|
| 1 | { | Uropods with the endopod simple | 1. <i>G. laevis</i> |
| | | Uropods with the endopod two-jointed — 2. | |
| 2 | { | Uropods with first joint of endopod longer than second . | 2. <i>G. carinatus</i> |
| | | Uropods with first joint of endopod not longer than second — 3. | |
| 3 | { | Carapace with numerous longitudinal ridges | 3. <i>G. costatus</i> |
| | | Carapace with a pair of dorso-lateral ridges | 4. <i>G. bicristatus</i> |

1. **G. laevis** Calm. 1911 *G. l.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 342, 367, 371 t. 35 f. 32—39 | 1912 *G. l.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 147.

Pseudorostral lobes short, slightly deflexed, apically truncate, sinus slightly defined by tooth in ♀, by rounded prominence in ♂. Surface of carapace quite smooth, eyelobe slightly prominent. Pedigerous segment 1 very short, 2nd very long, with side-plate produced anteriorly as a narrow lobe, 3d and 4th with side plates extended backwards. Pleon with faint lateral keels, 6th segment little shorter than 5th; telson little more than half the length of the preceding segment. Eyelobe shows neither pigment nor distinct facets. Antenna 1 short, 2nd joint of peduncle about $\frac{2}{3}$ ds of 3d, the small flagella each 3-jointed in ♀, the principal 4-jointed in the ♂. Antenna 2 of ♂

apparently much as in *G. carinatus*. Peraeopod 1, 2nd joint nearly twice as long as rest of limb, distally produced as a strong tooth, 6th half as long as 5th, with only 3 long setae on the sub-distal margin, 7th $\frac{2}{3}$ ds of 6th. Peraeopod 2, 6th and 7th joints subequal, together shorter than 5th. Peraeopods 3, 4 without exopods in either sex. Peduncle of uropods $\frac{2}{3}$ ds of 6th pleon segment, exopod about as long as peduncle (text), shorter in fig., endopod simple, a little longer than the exopod. L. ♀ 4.1 mm, ♂ (? adult) 2.4 mm.

N. Zealand, Lyttleton Harbour, depth 2—9 m.

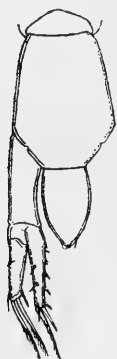


Fig. 111.
G. laevis (♀) Calman,
telson and uropod.



Fig. 112.
G. carinatus (♂) Calman,
telson and uropod.

2. *G. carinatus* Calm. 1911 *G. carinata*, Calman in: Tr. zool. Soc. London, v.18 iv p. 342, 367, 388 t. 35 f. 6—31 | 1912 *G. carinatus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146.

Pseudorostral lobes with edges acute, but apex truncate, sinus defined by slightly produced antero-lateral tooth in ♀, by rounded slightly serrate projection in ♂. Carapace with 5 or 6 pairs of longitudinal ridges, eyelobe less than twice as broad as long. Of the pedigerous segments all 5 in ♂, last 2 in ♀, have a pair of longitudinal dorso-lateral ridges, segment 3 has the side-plates expanded forwards and backwards, the attachment of the limbs in the ♀ widely separating the 2nd and 3^d pairs. Pleon with pair of lateral ridges. Pleon segment 5 in ♀ not much longer than the 6th; telson $\frac{2}{3}$ ds as long as the preceding segment, ovate, the bluntly pointed apex having 2 extremely minute setiform points. Eye without pigment, but with 3 large corneal lenses. Antenna 1 of ♀ with 2nd joint of peduncle much the shortest, both flagella very small. Antenna 2 of ♀ short, 3- or 4-jointed, in the ♂ very short, the large setose terminal joint of the peduncle being nearly as long as the 8-jointed flagellum. Maxilliped 1 almost or quite without branchial leaflets. Peraeopod 1, 2nd joint about $\frac{3}{4}$ ths of rest of limb, 5th more than twice the 6th, which is less than twice the 7th and carries on the oblique subdistal border a series of 10 remarkably long smooth setae. Peraeopod 2 with last 3 joints subequal in length. Peraeopods 3, 4, without exopods in either sex. Peduncle of the uropods a little shorter than pleon segment 6, exopod about $\frac{5}{6}$ ths of peduncle, endopod about $\frac{4}{5}$ ths of exopod in the ♀, its 2nd joint not half as long as the 1st, but in ♂ the peduncle is not longer than the exopod, this being little longer than the endopod, in which the 2nd joint is nearly as long as the 1st. L. ♀ 4 mm, ♂ 2.85 mm.

N. Zealand, Lyttleton Harbour, depth 2—9 m.

3. *G. costatus* Calm. 1911 *G. costata*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 342, 368, 372 t. 36 f. 1—10 | 1912 *G. costatus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 147.

Pseudorostral lobes and carapace much as in *G. carinatus*, but the ridges more numerous, some ill defined and interrupted, and just behind the sharp antero-lateral corners a short vertical pair, forming a tubercle behind the sinus, are continued upwards, carrying a series of thin, transparent, curved spines. Pedigerous segments of the ♀ much as in *G. carinatus*, but only the third with a pair of slightly marked dorso-lateral ridges. Pleon segment 6 little shorter than 5th; telson about $\frac{3}{4}$ ths of 6th, with 2 extremely minute setae or spinules at the bluntly pointed apex. Eye without pigment. Antenna 1, 2nd joint only half as long as 3^d. Antenna 2 in ♀ short, 4-jointed; in the ♂ also very short. Peraeopod 1, 2nd joint scarcely half rest of limb, 5th joint twice the 6th, which has about 11 long setae on the oblique distal part, 7th joint more than half the 6th. Exopod on all the first 4 pairs of peraeopods in the ♂, on only the first 2 in the ♀. Peduncle of uropods longer than 6th pleon segment, exopod in ♀ nearly as long as peduncle, a little shorter than the endopod, of which the 1st joint is slightly shorter than the 2nd, but in ♂ the peduncle is twice as long as the subequal rami. L. ♀ 2.35 mm, ♂ 1.9 mm.

Gulf of Siam, Koh Kam, 37 m; N. of Koh Chuen, 27 m; between Koh Mesan and Cape Lioht, depth 9—15 m.

4. *G. bicristatus* Calm. 1911 *G. bicristata*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 342, 368, 374 t. 36 f. 11—22 | 1912 *G. bicristatus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 147.

Pseudorostral lobes short, truncate, in ♀ horizontal, a little depressed in ♂, sinus well defined. Carapace with pair of strong cristiform ridges, diverging from hind margin forwards and then converging on to the sides of the pseudorostral lobes; eyelobe broad. Pedigerous segments each with pair of dorso-lateral crests, indistinct on the 5th; side-plates of 3^d not greatly expanded, with no great interval between 2nd and 3^d peraeopods. Pleon segment 5 little longer than the 4th. Telson a little shorter than the preceding segment. Eye without pigment. Antenna 1, 2nd joint more than half the 3^d. Antenna 2 of ♀ 3-jointed, of ♂ very short. Maxilliped 1 apparently without branchial leaflets. Peraeopod 1, 2nd joint about half rest of limb, 5th more than twice 6th, which has distally about 9 very long setae, 7th little over half the 6th. Exopods on all the first 4 pairs of peraeopods in the ♂, only on first 2 in ♀. Peduncle of uropods about twice as long as the telson, exopod shorter than endopod, which is considerably shorter than the peduncle, with 1st joint shorter than 2nd. L. ♀ 1.9 mm, ♂ 1.7 mm.

Japan, 73 m; Gulf of Siam Koh Kam, 9—18 m; between Koh Mesan and Cape Lioht, depth 9—15 m.

23. Fam. **Heteroleuconidae**

1912 *Heteroleuconidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 156.

Telson wanting. Second antenna in female three-jointed, the flagellum in male very short. Mandible with base broad, molar obtuse. First maxilla with single filament to the palp. Only the first two pairs of peraeopods with exopods in either sex. No pleopods in male or female. Uropods with endopod simple.

1 genus.

1. Gen. **Heteroleucon** Calman

1907 *Heteroleucon* (Sp. un.: *H. akaroënsis*), Calman in: Tr. zool. Soc. London, v. 181 p. 32, 34.

For the single genus the characters of the family for the present suffice.

1 species.

1. *H. akaroënsis* Calm. 1907 *H. a.*, Calman in: Tr. zool. Soc. London, v. 181 p. 34 t. 8 f. 11—23.

♀. Pseudorostral lobes directed obliquely upwards with upper margin straight, apically acute; antero-lateral corners preceded by a double denticle and small rounded sinus, then beginning a serrate division of the lower margin. Median line of carapace having the carina serrate with 8—10 teeth in front half and one larger tooth close to hind margin. Telsonic segment little produced between bases of uropods. Antenna 1 with first 2 joints stout, 3^d shorter and narrower, flagellum 2-jointed, accessory 1-jointed. Antenna 2 three-jointed, with 2 setae on the 1st joint. Maxilliped 1 with only 2 small papilliform branchial sacs. Peraeopod 1 with 2nd joint shorter

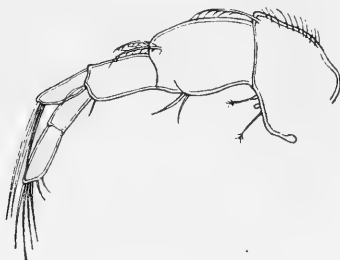


Fig. 113.

H. akaroënsis (♀) Calman, antenna 1.



Fig. 114.

H. akaroënsis (♀) Calman, antenna 2.

than rest of limb. Peraeopod 2 with very short 3^d joint. Peduncle of uropods rather shorter than the subequal rami, endopod with about 10 spines on medial margin and a strong, dorsally curved, apical spine. L. 2·75 mm.

♂. Pseudorostral lobes very short, horizontal, apically rounded; antero-lateral corners broadly rounded and serrated. Median line of carapace smooth, except for one or two small serrations anteriorly. Antenna 1 with 3-jointed flagellum. Antenna 2 with flagellum very short, not longer than peduncle, 9-jointed. Peduncle of uropods little more than half as long as the rami. L. 1·65 mm.

New Zealand, Akaroa Harbour, depth 11 m (both sexes), Lyttleton Harbour, depth 2—9 m (females).

24. Fam. **Nannastacidae**

1866 *Nannastacidae*, Bate in: Zool. Rec., v. 2 p. 329 | 1878 & 1879 *Cumellidae*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 466; v. 4 p. 92 | 1880 *C.*, Kossmann, Reise Roth. Meer., Malac. pars 2 p. 90 | 1887 *C.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 62 | 1893 *Nannastacidae*, T. Stebbing in: Int. sci. Ser., v. 74 p. 305, 312 | 1895 *N.*, H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c. p. 59 | 1897 *Cumellidae*, Ehrenbaum in: Wiss. Meeresunters., v. 21 p. 419 | 1900 *Nannastacidae*, G. O. Sars, Crust. Norway, v. 3 p. 79 | 1900 *N.*, Zimmer in: Fauna arctica, v. 1 p. 428, 431 | 1900 *N.*, T. Stebbing in: Willey, Zool. Results, pars 5 p. 611 | 1904 *N.*, Calman in: Herdman, Rep. Ceylon

Pearl Fish., v. 2 p. 176 | 1905 *N.* (part.), Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 22 | 1905 *N.* (part.), Calman in: Siboga-Exp., nr. 36 p. 10 | 1906 *N.* (part.), Calman in: Mt. Stat. Neapel, v. 17 p. 417 | 1907 *N.* (part.), Zimmer in: Zool. Anz., v. 31 p. 369 | 1911 *N.* (part.), Calman in: Tr. zool. Soc. London, v. 18iv p. 341 | 1912 *N.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10v p. 133, 164.

Pseudorostral lobes with antero-lateral corners well expressed. Telson wanting. Eyes sometimes developed as a distinctly separated pair. Accessory flagellum of first antenna very small. Second antenna of female one-, two-, or sometimes three-jointed. Mandibles normal. First maxilla with two filaments to the palp or only a single filament. First four pairs of peraeopods in male with exopods, in the female only the first two pairs or none. No pleopods in either sex. Uropods with the endopod simple.

6 genera accepted, 1 doubtful.

Synopsis of accepted genera:

- | | | | |
|---|---|--|--------------------------------|
| 1 | { | Eyes, when present, paired — 2. | |
| | { | Eyes, when present, not paired — 4. | |
| 2 | { | Exhalant respiratory orifices paired | 1. Gen. Schizotrema |
| | { | Exhalant respiratory orifice single — 3. | |
| 3 | { | First and second peraeopods of the female without exopods | 2. Gen. Paranannastacus |
| | { | First and second peraeopods of the female with exopods | 3. Gen. Nannastacus |
| 4 | { | Alimentary canal spirally coiled; 1st maxilla with single filament | 4. Gen. Platycuma |
| | { | Alimentary canal not coiled, 1st maxilla with 2 filaments — 5. | |
| 5 | { | Carapace more or less overhanging anterior pedigerous segments | 5. Gen. Cumellopsis |
| | { | Carapace not overhanging the anterior pedigerous segments | 6. Gen. Cumella |

1. Gen. **Schizotrema** Calman

1911 *Schizotrema*, Calman in: Tr. zool. Soc. London, v. 18iv p. 341, 360 | 1912 *S.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10v p. 164, 165.

Respiratory orifices paired, wide apart. Pseudorostral lobes not meeting in front. Carapace somewhat depressed, not or little overhanging pedigerous segments. Third maxillipeds and first and second peraeopods with exopods in female. Other characters as in *Nannastacus* (p. 168).

4 species.

Synopsis of species:

- | | | | |
|---|---|---|------------------------|
| 1 | { | Uropods with peduncle longer than the endopod | 1. S. calmani |
| | { | Uropods with peduncle not longer than the endopod — 2. | |
| 2 | { | Uropods with endopod little longer than the peduncle . . | 2. S. depressum |
| | { | Uropods with endopod very much longer than the peduncle — 3. | |
| 3 | { | Telsonic segment longer than preceding segment, apically acute | 3. S. bifrons |
| | { | Telsonic segment shorter than preceding segment, apically rounded | 4. S. sordidum |

1. *S. calmani* Stebb. 1912 *S. c.*, T. Stebbing in: *Ann. S. Afr. Mus.*, v. 10 v p. 165 t. 61.

Pseudorostral lobes upturned, widely divergent. Carapace with small median eyeless eyelobe, median line finely denticulate and setulose, lateral margins fringed with denticles conspicuous anteriorly, soon dwindling away. Pedigerous segments 2—5 with laterally flattened edges cut into denticles. Pleon segments 1—5 with dorsal and ventral lines of denticulation and lateral ridges, 5th segment long, distally narrowed, telsonic segment short. Antenna 1, 3^d joint shorter than 2nd. Maxilliped 1 with last joint slender; branchial leaflets about seven. Maxilliped 3 with 6th joint curved, apically a little widened. Peraeopods 3, 4, with 2nd joint piriform, the rest very slender. Peduncle of uropods denticulate along 3 edges, twice as long as the endopod; exopod about $\frac{4}{5}$ ths of endopod. L. ♂ about 2.5 mm. ♀ unknown.

S. Africa, Cape Natal distant N. by E. 24 miles, 805 m.

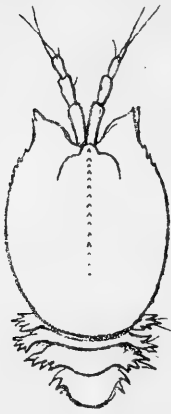


Fig. 115.

S. calmani (♂) Stebbing, antenna 1, carapace, pedigerous segments.

2. *S. depressum* Calm. 1911 *S. d.*, Calman in: *Tr. zool. Soc. London*, v. 18 iv p. 341, 361 t. 34 f. 14—17.

Pseudorostral lobes short, truncate, obliquely upturned, each surrounding the branchial orifice from which a long branchial siphon is protrusible; front margin nearly vertical, antero-lateral corner rounded, ending in curved spine, from which a dwindling series runs back, with 2 or 3 large ones at the end. Carapace very broad and depressed, minutely granular, with long setae on various parts of this section and the body in general. Pedigerous segments broad and depressed, with large spines on the side-plates. Pleon short, all segments but the 1st with stout lateral spines, the telsonic segment a little shorter than the 5th, rotundo-quadrate. Eyes dark, set just behind the branchial orifices. Antenna 1, 3^d joint longer than 2nd, flagellum 2-jointed. Antenna 2 of ♀ with 2 teeth on anterior margin of the basal part, the apex conically produced. Maxilliped 3 with 5th and 6th joints somewhat widened. Peraeopods 3—5 short and stout, in the 3^d pair the 5th joint hardly longer than the 4th and shorter than the 6th, in the 5th pair the 5th joint about one half longer than the 4th and subequal to the 6th. Peduncle of uropods a little longer than the telsonic segment, with 3 conspicuous teeth on the medial margin; endopod a little longer than the peduncle, a little shorter than the spine at its apex; the exopod more than three-fourths as long as the endopod, with a long apical spine. L. ♀ 1.5 mm.

Gulf of Siam, depth 2 m.

3. *S. bifrons* Calm. 1911 *S. b.*, Calman in: *Tr. zool. Soc. London*, v. 18 iv p. 341, 362 t. 34 f. 18—21.

Pseudorostral lobes short, obtuse, with irregular denticles on the lower edge, the front margin thence receding to the base of a stout cylindrical process which supplies the antero-lateral angle, being itself tipped with a curved spine and fringed with denticles on its surface. The respiratory orifices and branchial siphons as in the preceding species. Carapace broad, with scattered spinules or tubercles and short hairs. First pedigerous segment almost concealed, the rest broad, depressed, tuberculate. Pleon short, the telsonic segment longer than the 5th, apically acute. Eyes dark, each

with 3 lenses, placed just behind the branchial orifices. Antenna 1, with 2 spines at the end of 1st joint. Hinder peraeopods rather long and slender; in the 5th pair the 5th joint nearly thrice as long as the 4th and a little longer than the 6th. Peduncle of uropods about half as long as the telsonic segment, irregularly denticulate on both edges; endopod about two and a half times as long as the peduncle, with stout apical spine about half its length; exopod a little less than half as long as endopod, but with apical spine reaching beyond it. L. ♀ 1.65 mm.

Paumben, India, depth 2—9 m.

4. **S. sordidum** Calm. 1911 *S. s.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 341, 363 t. 34 f. 22—24.

Pseudorostral lobes short, truncate, obliquely upturned, the front margin with concave recession to the sharply produced antero-lateral angle which bears a transparent apical spine. Orifices and siphons as in the other species. Carapace rather broad and depressed, with scattered long hairs. Pedigerous segments broad, depressed, with scattered and a few pellucid spines. Telsonic segment a little shorter than the 5th, round-ended. Eyes dark, in the usual position. Antenna 1, 3^d joint slightly longer than 2nd, flagellum 3-jointed, the last joint minute. Peraeopods 3—5 very long and slender; in the 5th pair the 5th joint nearly 4 times as long as the 4th and one-third longer than the 6th. Peduncle of uropods not more than half as long as the telsonic segment; the endopod more than thrice as long as the peduncle; exopod about half as long as the endopod. L. ♀ 1 mm.

Gulf of Siam, depth 2 m.

2. Gen. **Paranannastacus** T. Stebbing

1912 *Paranannastacus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 164.

Like *Nannastacus* (p. 168), but with no exopods on either the third maxillipeds or the first and second peraeopods of the female.

2 species.

Synopsis of species:

| | | |
|---|---|----------------------|
| { | Antero-lateral angles of carapace not produced beyond the pseudorostrum | 1. P. reptans |
| | Antero-lateral angles of carapace produced beyond the pseudorostrum | 2. P. tardus |

1. **P. reptans** (Calm.) 1911 *Nannastacus r.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 341, 356 t. 33 f. 22—28 | 1912 *Paranannastacus r.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 164.

Pseudorostral lobes shortly produced, somewhat upturned, truncate, meeting in the middle line below the branchial orifice, antero-lateral margin deeply concave, antero-lateral corner acutely produced. Carapace little broader than deep, depressed in middle line between the inflated branchial regions and with a median convexity anteriorly. Pedigerous segment 1 reduced to the side-plates, 5th pedigerous and 1st pleon segment each with a pair of small spiniform dorsal teeth. The pair of eyes prominent and darkly pigmented. Antenna 1, 2nd and 3^d joints subequal, and together subequal to 1st joint, principal flagellum with minute terminal joint. Maxilliped 3 and peraeopods 1, 2, without exopods. In maxilliped 3 and peraeopod 1 the 2nd joint is very short; not short but not inflated in peraeopod 2. Peduncle of

uropods about half, exopod less than a fifth, as long as the endopod; terminal spine of exopod much longer than that of endopod. L. ♀ 1.5 mm. ♂ unknown.

Gulf of Siam, depth 2 m.

2. *P. tardus* (Calm.) 1911 *Nannastacus t.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 341, 359 t. 34 f. 4—11 | 1912 *Paranannastacus t.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 164.

Pseudorostral lobes shortly produced, slightly upturned, truncate, meeting in the middle line below, and apparently also above, the branchial orifice, antero-lateral margin deeply concave, antero-lateral corner strongly produced, serrate below. Carapace considerably broader than deep, with branchial regions little inflated. Pedigerous segment 1 reduced to laterally expanded side-plates with marginal laminar spines; the next segment with small median dorsal tooth. Pleon segment 1 with pair of small dorso-lateral teeth, often (perhaps accidentally) absent. The pair of eyes as figured rather small. Antenna 1, 2nd and 3^d joints subequal, and combined in length subequal to the stouter 1st joint. Maxilliped 3 and pereopods 1, 2, without exopods, with 2nd joint not elongate, but in the maxillipeds having a long narrow distal process, and in pereopod 1 having a prominent rounded lobe on the medial margin. Uropods differing from those of *P. reptans* (p. 167) chiefly by the terminal spine of the exopod, which is shorter instead of much longer than that of the endopod. L. ♀ 1.6 mm. ♂ not known.

Gulf of Siam; depths between 9 and 28 m.

3. Gen. *Nannastacus* Bate

1865 *Nannastacus* (Sp. typ.: *Cuma unguiculata*), Bate in: Ann. nat. Hist., ser. 3 v. 15 p. 86 | 1878 & 1879 *N.*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 566; v. 4 p. 108 | 1880 *N.*, Kossmann, Reise Roth. Meer., Malac. pars 2 p. 90 | 1887 *N.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 62 | 1893 *N.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 305 | 1900 *N.*, G. O. Sars, Crust. Norway, v. 3 p. 79 | 1900 *N.*, T. Stebbing in: Willey, Zool. Results, pars 5 p. 611 | 1904 *N.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 176 | 1905 *N.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 23 | 1905 *N.*, Calman in: Siboga-Exp., nr. 36 p. 10 | 1911 *N.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 350 | 1912 *N.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 164.

Antero-lateral angles of carapace well defined. Eyes, when present, divided into a distinct pair. Maxilla 1 with 2 filaments to the palp. Third maxilliped with exopod in the male, but not always in the female. First two pereopods with exopods in the female. Uropods with endopod longer, generally much longer, than the exopod.

16 species.

Synopsis of species:

- | | | | |
|---|---|--|--|
| 1 | { | Third maxilliped without exopod in the female — 2. | |
| | { | Third maxilliped with exopod in both sexes — 6. | |
| 2 | { | Antero-lateral angle of carapace obtuse — 3. | |
| | { | Antero-lateral angle of carapace acute — 4. | |
| 3 | { | Antero-lateral angle of carapace armed with a spine 1. <i>N. zimmeri</i> | |
| | { | Antero-lateral angle of carapace without spine 2. <i>N. suhmii</i> | |
| 4 | { | Uropods with endopod nearly thrice as long as peduncle 3. <i>N. gibbosus</i> | |
| | { | Uropods with endopod not nearly thrice as long as peduncle — 5. | |
| 5 | { | Carapace little broader than deep 4. <i>N. minor</i> | |
| | { | Carapace considerably broader than deep 5. <i>N. agnatus</i> | |

- 6 { Uropods with peduncle at least twice as long as telsonic segment — 7.
 Uropods with peduncle not nearly twice as long as telsonic segment — 9.
- 7 { Pseudorostrum short 6. *N. lepturus*
 Pseudorostrum long — 8.
- 8 { Pseudorostral lobes strongly produced with divergent apices 7. *N. longirostris*
 Pseudorostral lobes less strongly produced, the truncate apices not divergent 8. *N. brachydactylus*
- 9 { First five segments of pleon with paired dorsal carinae — 10.
 Pleon segments without paired dorsal carinae — 11.
- 10 { Pseudorostrum upturned, ridged 9. *N. ossiani*
 Pseudorostrum horizontal, smooth 10. *N. hanseni*
- 11 { Carapace smooth — 12.
 Carapace rough with hairs, granules, or spines — 13.
- 12 { Fifth peraeopod with fifth joint little longer than sixth 11. *N. georgi*
 Fifth peraeopod with fifth joint much longer than sixth 12. *N. pardus*
- 13 { Eyes not very wide apart 13. *N. hirsutus*
 Eyes wide apart — 14.
- 14 { Carapace roughened with granules, without spines . . . 14. *N. brevicaudatus*
 Carapace with spines — 15.
- 15 { Antero-lateral angles of carapace serrate; uropods with exopod about one-third as long as endopod . . . 15. *N. unguiculatus*
 Antero-lateral angles of carapace not serrate; uropod with exopod nearly half as long as endopod . . . 16. *N. stebbingi*

1. *N. zimmeri* Calm. 1911 *N. z.*, Calman in: *Tr. zool. Soc. London*, v. 18 iv p. 341, 352 t. 33 f. 4—15.

♀. Pseudorostral lobes short, obliquely upturned, narrowly truncate, meeting below but not above the branchial channel; antero-lateral margin deeply concave, antero-lateral angle produced into a blunt, apically setose spine. Carapace inflated behind, much narrowed in front, dorsal line convex, a slight elevation at the rear bearing a small tubercle. Pedigerous segment 1 a narrow strip with expanded side-plates. Pleon without teeth or spines. Maxilliped 3 without exopod, but with blunt distal process on 2nd joint. Peraeopods 1, 2, with exopods. Peduncle of uropods nearly one-third as long as the endopod, which is over eight times the length of the exopod, but has a shorter apical spine. A dark patch of pigment on each side of the carapace anteriorly, and a band encircling 5th segment of pleon. L. 1.5 mm.

♂. Pseudorostral lobes short, blunt, meeting a short distance above the branchial channel; antero-lateral margin deeply concave, angle rounded and followed by a curved spine and some serration. Carapace with surface minutely granular, not much narrowed in front, dorsal line nearly straight, with depression between the inflated branchial regions. Pedigerous segment 1 scarcely visible, and its side-plates very small. Pleon with lateral groove overhung by a serrated crest in each segment. Eyes dark, larger than in ♀, and less wide apart. Antenna 1 has 2nd joint produced distally into a narrow process tipped with plumose setae. Maxilliped 3 with well developed exopod, 2nd joint relatively longer than in ♀. Peraeopod 5 with 5th and 7th joints long. Uropods with endopod about ten times as long as exopod. Colour as in ♀ and sometimes also bands on 3^d and 4th pleon segments. L. 1.6 mm.

Trincomali, Ceylon, surface.

2. **N. suhmii** O. Sars 1887 *N. s.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 9, 63 t. 10 f. 4, 5 (*N. suhmi* in: explanation of plate) | 1900 *N. s.*, T. Stebbing in: Willey, Zool. Results, pars 5 p. 64 | 1904 *N. s.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 177 | 1905 *N. s.*, Calman in: Siboga-Exp., nr. 36 p. 12 | 1911 *N. s.*, Calman in: Tr. zool. Soc. London, v. 18iv p. 354 | 1912 *N. s.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10v p. 164.

♀. Form of body rather stout. Pseudorostral lobes obliquely upturned, forming a narrow blunt-ended tube tipped with setules, antero-lateral margins broadly concave, the lower corners strongly produced, ending bluntly, serrate below. Carapace setulose, without keels or spines (Sars), but perhaps with medio-dorsal tooth or spine (Calman), boldly arched till near the end which carries a few small denticles. First 4 pedigerous segments very short, side-plates evenly rounded, quite smooth. Pleon with a few very small denticles on dorsal surface of each segment (G. O. Sars), anterior pleon segments with strong paired teeth on dorsal surface (Calman). Eyes wide apart, each with 3 corneal lenses. Antenna 1 slender, accessory flagellum knob-shaped. Maxilliped 3 and peraeopods 1, 2, with remarkably small exopods (G. O. Sars), maxilliped 3 with no trace of an exopod (Calman). Peraeopods 3—5 subequal, considerably longer than peraeopod 2, their 5th and 6th joints elongate. Peduncle of uropods unusually short, exopod exceedingly small, though consisting of two well defined joints, endopod rather elongate. Colour rather pellucid, with a few dark brown patches, one low down on each side of carapace, and a band on 5th pleon segment. L. about 2—2.6 mm.

♂. Less robust than ♀. Pseudorostral lobes little prominent, obtusely rounded, antero-lateral corners less prominent, lower margin irregularly flexuous, smooth. Carapace with dorsal line almost horizontal. Pleon segments quite smooth. Eyes much larger than in ♀. Antenna 2 scarcely reaching beyond 3^d pleon segment. joints of flagellum very long and thin. Peraeopod 1 with 5th and 6th joints slender, subequal, the 7th shorter. Endopod of uropods even more elongate than in the ♀. Colour much darker and more extended. In both sexes a dark band on 4th joint of maxilliped 3 and peraeopod 1.

Off Samboanga, Philippine Islands; surface.

3. **N. gibbosus** Calm. 1911 *N. g.*, Calman in: Tr. zool. Soc. London, v. 18iv p. 341, 355 t. 33 f. 16—21.

Pseudorostral lobes short, truncate, meeting in middle line below branchial orifice. antero-lateral margin deeply concave, lower corner produced, triangular, sometimes with one or two denticles at apex. Carapace variable, uneven, setose. with depression between branchial bosses, a small boss behind each eye. a denticle sometimes behind the eyes and one or two on rearward dorsal elevation. Pedigerous segment 1 represented only by side-plates, those of the following segments expanded and rounded, segments 2 and 5 sometimes with medio-dorsal denticle, such as also occurs sometimes on pleon segment 1. Eyes prominent, dark. Antenna 1, 3^d joint longer than 2nd, flagellum with minute terminal joint. Maxilliped 3 without exopod, 2nd joint rather short, apical process not long. Peraeopods 1, 2, with well developed exopods, 2nd joint of peraeopod 2 dilated, 5th joint longer than 4th, 7th twice as long as 6th; in 5th pair 5th joint fully twice 4th and subequal to 7th joint. Endopod of uropods nearly thrice length of peduncle and fully 8 times as long as exopod, but apical spine of exopod considerably longer than that of endopod. L. ♀ 1.8 mm. ♂ unknown.

Gulf of Siam, 4—9 m.

4. *N. minor* Calm. 1911 *N. m.*, Calman in: Tr. zool. Soc. London, v.18iv p.341, 357 t.34 f.1—3 | 1912 *N. m.*, T. Stebbing in: Ann. S. Afr. Mus., v.10v p.164.

Like *Paranannastacus reptans* (p.167), but dorsal surface of carapace less arched, and branchial regions less inflated, antenna 1 with 3^d segment shorter than 2nd, peraeopods 1, 2, with well developed exopods, 2nd pair with 2nd joint inflated. L. ♀ 1.3 mm. ♂ unknown.

Gulf of Siam, depth 2 m.

5. *N. agnatus* Calm. 1911 *N. a.*, Calman in: Tr. zool. Soc. London, v.18iv p.341, 360 t.34 f.12, 13 | 1912 *N. a.*, T. Stebbing in: Ann. S. Afr. Mus., v.10v p.164.

Like *Paranannastacus tardus* (p.168), but telsonic segment shorter, peraeopods 1, 2, with well developed exopods, 2nd joint of 1st pair a little shorter. 2nd joint of 2nd pair a little longer, hinder pairs slightly stouter and shorter. L. ♀ 1.3 mm. ♂ unknown.

Gulf of Siam, depths between 9 and 28 m.

6. *N. lepturus* Calm. 1911 *N. l.*, Calman in: Tr. zool. Soc. London, v.18iv p.341, 352 t.33 f.1—3.

Pseudorostral lobes short, truncate, antero-lateral margin shallowly concave, lower corner rounded. Carapace slightly compressed, dorsal line a little convex. Pedigerous segment 1 distinct, side-plates of the following segments little expanded laterally. Pleon segments each with well marked lateral groove, 5th twice as long as the truncate telsonic segment. Antenna 1, 2nd joint with sub-distal process not reaching beyond the apex, each flagellum 2-jointed, accessory a little shorter than 1st joint of principal. Peduncle of uropods about twice as long as the endopod, which has 7 spines on the medial margin; exopod about four-fifths as long as endopod, but with a much longer apical spine. L. ♂ 2 mm. ♀ unknown.

Suez.

7. *N. longirostris* O. Sars 1879 *N. l.*, G. O. Sars in: Arch. Naturv. Kristian., v.4 p.119 t.58, 59 | 1905 *N. l.*, Calman in: Siboga-Exp., nr.36 p.15 | 1911 *N. l.*, Calman in: Tr. zool. Soc. London, v.18iv p.352.

A slender form, integument thin, setulose especially in ♀. Pseudorostral lobes strongly produced, horizontal, with divergent apices which are serrate and setose, antero-lateral margin concave, lower corner little produced, acute and bidentate in ♀, rounded in ♂. Carapace depressed along the middle, in profile nearly horizontal, till it bends down to the long pseudorostral lobes. Pedigerous segment 1 short but distinct. Eyes wide apart, each with 3 corneal lenses, larger in ♂ than in ♀. Antenna 1, 3^d joint longer than 2nd, nearly as long as 1st, accessory flagellum 2-jointed. Maxilliped 1, exopods forming two clearly separated very narrow tubes, apically truncate, far-

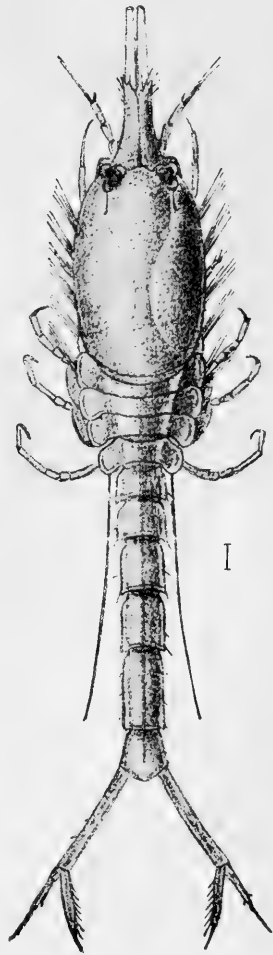


Fig. 116.
N. longirostris (♂) Sars.

projected, the ends usually a little divergent. Peraeopod 1 with 4—6 laminar spines on lateral margin of 2nd joint, 7th joint more than half as long as 6th, with long thin spine-like claw. Peduncle of uropods long and narrow, especially in the ♂, more than twice as long as the exopod which is from four-fifths to three-fourths as long as the endopod and has a longer apical spine; endopod with 4 spines on medial margin in ♀, 7 in ♂. Colour greyish white, with some darker patches in front. L. 3 mm.

Mediterranean, at Spezia; depths 11—19 m.

8. **N. brachydaetylus** Calm. 1905 *N. b.*, Calman in: Siboga-Exp., nr. 36 p. 2, 14 ff. 3a—c.

Allied to *N. longirostris*, but integument not setulose, pseudorostral lobes less elongate, not apically divergent, antero-lateral margin very short, lower corner quadrate; telsonic segment broader than long; eyes very large, dark, near together; peraeopod 1 very stout, 7th joint less than one-third of the length of the 6th, with very short stout curved claw; peduncle of uropods a little more than one and a half times the length of the endopod, which has a short apical spine and 7 spines on the medial margin: exopod incomplete, apparently agreeing with that of *N. longirostris*. L. ♂ 1.6 mm. ♀ unknown.

Sailus Ketjil, Paternoster Islands (Sunda-Sea?); surface.

9. **N. ossiani** Stebb. 1900 *N. o.*, T. Stebbing in: Willey, Zool. Results, pars 5 p. 606, 612 t. 64A | 1904 *N. o.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 177 | 1905 *N. o.*, Calman in: Siboga-Exp., nr. 36 p. 12.

Pseudorostral lobes obliquely upturned, apically rounded, the distal part concentrically ridged, bases of 3 spines below the upturned lobes (shown in figure); antero-lateral corners blunt, little produced. Carapace tumid, median line in profile with long anterior and short hinder convexity, branchial regions inflated. Fourth and fifth pedigerous segments having the centre dorsally much elevated. Pleon segments with pellucid lateral carinae and pair of serrate dorsal carinae, distally extended into a strong tooth in segments 1—5, segment 5 not greatly longer than any other, telsonic segment apically pointed. Eyes wide apart, dark, apparently composed each of 3 corneal lenses. Flagellum of antenna 2 comparatively short, 10-jointed. In peraeopod 1, 5th joint subequal to 6th, but considerably longer than 6th in 3^d, 4th, and 5th pairs. Peduncle of uropods a little shorter than the slender exopod, which is no doubt shorter than the much stouter (broken) endopod. L. ♂ 2 mm. ♀ unknown.

Blanche Bay, New Britain; surface.

10. **N. hansenii** Calm. 1905 *N. h.*, Calman in: Siboga-Exp., nr. 36 p. 11 ff. 1a—e.

Pseudorostral lobes horizontal, apically truncate, not ridged, not meeting either above or below the branchial orifice; antero-lateral corners blunt, obscurely serrate, slightly produced. Carapace depressed in median line between the inflated branchial regions, elevated behind into bilobed prominence overhanging some of the pedigerous segments, of which the last 3 have each a dorsal pair of spinose prominences. Pleon segments 1—4 have lofty spine-tipped pairs of prominences, the 5th segment a much lower pair, telsonic segment apically pointed. Eyes large, dark, each with 3 corneal lenses. Limbs as in *N. ossiani* (nr. 9), and probably also the uropods, the unbroken endopod

twice as long as the exopod, with a shorter apical spine. Integument beset with tubercles and granules. L. ♂ 1.5 mm. ♀ unknown.

Paternoster Islands, and between these and Postillion Islands; surface.

11. **N. georgi** Stebb. 1900 *N. g.*, T. Stebbing in: Willey, Zool. Results, pars 5 p. 606, 613 t. 64 B | 1905 *N. g.*, Calman in: Siboga-Exp., nr. 36 p. 12.

Near to *N. sulmii* ♂ (nr. 2) and *N. zimмери* ♂ (nr. 1). Pseudorostral lobes subhorizontal, apically rounded, not carinate, antero-lateral margin sinuous, lower corner acute. Carapace with branchial regions inflated flanking a depression between long and short convexities of the median line. 1st pedigerous segment almost entirely concealed; fifth pedigerous and 1st pleon segment with a marked longitudinal medio-dorsal depression. Pleon segments with pellucid lateral carinae, 5th segment considerably the longest, telsonic segment distally triangular. Eyes well separated, large, dark, each with 3 corneal lenses. Antenna 2. flagellum of 18 joints or more, distally extremely slender. Maxilliped 1, branchial leaflets about 16. Peraeopod 5, 5th joint not greatly longer than 6th. Peduncle of uropods more than twice as long as the very short exopod, but scarcely a third as long as the endopod; apical spine of exopod considerably longer than that of endopod. L. ♂ 2.5 mm. ♀ unknown.

Blanche Bay, New Britain; surface.

12. **N. pardus** Calm. 1905 *N. p.*, Calman in: Siboga-Exp., nr. 36 p. 2, 13 tf. 2a—c.

Pseudorostral lobes very short, upturned, apically rounded, not meeting above. antero-lateral margin forming two convexities, lower corner rounded with a single curved tooth on its surface. Carapace smooth, median line forming long and short low convexities, separated by slight depression between the branchial regions. The 5 pedigerous segments unarmed, dorsally rounded, with expanded side-plates. Pleon stout, setulose, first 5 segments with well marked lateral groove, telsonic segment little shorter than 5th, extended to a blunt apex. Eyes large, dark, each with 3 corneal lenses. Peraeopod 5 long and slender, its 6th joint only two-thirds as long as 5th. Peduncle of uropods about one-third, exopod about one-fourth, as long as the endopod; apical spine of exopod much longer than that of endopod. Colour characteristic, large black spots in great numbers, especially dark on the carapace. L. ♂ 1.7 mm. ♀ unknown.

Paternoster Islands; surface.

13. **N. hirsutus** H. J. Hansen 1895 *N. h.*, H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c. p. 59 t. 7 f. 3, 3a, b.

Whole body free from spines or processes but beset with scattered tolerably long hairs. Pseudorostral lobes somewhat upturned, meeting in front, obliquely truncate, antero-lateral margin shallowly concave, lower corner not at all produced, obtusely quadrate and armed with a stout plumose seta. Carapace plump, medio-dorsal line evenly convex. All five pedigerous segments distinct. Telsonic segment not much shorter than 5th, blunt at apex. Eyes not far apart. Antenna 1, 2nd joint rather longer than 3^d, flagellum of 2 equal joints, accessory rudimentary. Peduncle of uropods longer than the exopod, endopod defective. Colour brownish grey. L. ovigerous ♀ 1.7 mm, ♂ unknown.

Bermudas.

14. *N. brevicaudatus* Calm. 1905 *N. b.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 11, 26 t. 1 f. 15—19.

♀. Near to *N. unguiculatus* (nr. 15), but pseudorostral lobes very short, not rising above eyes in lateral view, antero-lateral corner less produced, rounded at apex, finely serrate below. Surface of carapace rough with prominent granules but with no flattened spines. Pedigerous segments with a few small spines near lateral margins. Pleon shorter and stouter, telsonic segment with no median spine on hind margin. Eyes colourless or with colour easily disappearing. Antenna 1, process on 2nd joint shorter. In peraeopod 3 the 2nd joint equals in length the remaining joints combined, and in the 4th and 5th pairs is nearly two-thirds of their length. Peduncle of uropods little longer than its distal breadth, endopod once and a half as long as the peduncle and exopod about two-fifths as long as the endopod. L. 1.8 mm.

♂. Near to *N. unguiculatus*, but scattered setae on surface more numerous, pleon much shorter, serrations on its dorsal surface less distinct; eye pigment much less dark, reddish brown; hinder peraeopods with 2nd joint relatively longer, that of 4th pair nearly equal to remaining joints combined; peduncle of uropods about two-thirds as broad as long, a little over half as long as the endopod, which is about thrice as long as the exopod. Body as preserved colourless. L. 1.95 mm.

Ballynakill Harbour.

15. *N. unguiculatus* (Bate) 1859 *Cuma unguiculata*, Bate in: Ann. nat. Hist., ser. 3 v. 3 p. 273 tf. ♀, *i, m, u* | 1865 *Nannastacus binoculoides*, Bate in: Ann. nat. Hist., ser. 3 v. 15 p. 87 t. 1 f. 4 (♂) | 1869 *Nannastacus b.*, A. M. Norman in: Rep. Brit. Ass., v. 38 p. 259 | 1879 *Nannastacus unguiculatus*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 109 t. 55—57 | 1889 *Nannastacus u.* (part.), D. Robertson in: P. nat. Hist. Soc. Glasgow, ser. 2 v. 31 Tr. p. 49 | 1893 *Nannastacus u.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 305 | 1901 *N. unguiculata*, T. Scott in: Rep. Fish. Board Scotl., v. 19 p. 276 | 1902 *N. unguiculatus*, T. Scott in: Rep. Fish. Board Scotl., v. 20 p. 480 | 1904 *N. u.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 176 | 1905 *N. u.*, Calman in: Siboga-Exp., nr. 36 p. 12, 13 | 1905 *N. u.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 25 | 1906 *N. u.*, A. M. Norman & T. Scott, Crust. Devon Cornwall, p. 33.

♀. Body short and plump. Integument hard, rough with little tubercles and scattered hairs. Pseudorostral lobes not very long, upturned nearly perpendicularly, with serrate edges, meeting below the branchial orifice: antero-lateral margin deeply concave, the lower corner being strongly and sharply outdrawn, the margin below coarsely serrate for a long distance backward. The large carapace obliquely truncate behind, its medio-dorsal line convex till near the rear, where a short depression is followed by another rise, which is spinose; the former convexity carries 2 longitudinal rows of spines, which are small compared with the curved rows of flattened spines which flank the branchial regions to the rear. One or two similar spines are found on the margins of the outstanding side-plates of each pedigerous segment. These segments have also dorsally 2 rows of smaller spines. Such spines are continued on the pleon, each row having 3 on the 5th segment, 2 on the 4th, 1 spine only on each of the other segments. The telsonic segment has a single spine on its obtuse apex. Eyes wide apart, very dark, each with 3 corneal lenses. Antenna 1, 2nd joint apically produced, flagellum 3-jointed, accessory 1-jointed, rudimentary. Antenna 2 1-jointed, with 3 setae. Exopods of maxillipeds 3 and peraeopod 1, 2, slender. Peraeopods 3—5

all longer than pereopod 2, and successively longer; 2nd joint in pereopod 3 nearly as long as the other joints combined, but in 4 and 5 much shorter, in those pairs the 5th joint longer than the 6th. Peduncle of uropods less than half as long as endopod, which is about thrice as long as the exopod, but with much shorter apical spine. L. about 2 mm.

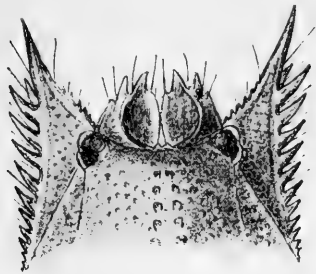


Fig. 117.
N. unguiculatus (♀) Bate, front (after Sars).



Fig. 119.
N. unguiculatus (♀) Bate, maxilliped 2, vibratory lamina (after Sars).



Fig. 118.
N. unguiculatus (♀) Bate, maxilliped 1 (after Sars).



Fig. 120.
N. unguiculatus Bate, maxilliped 3 (after Sars).

♂. Body slightly more slender, without scattered hairs. Pseudorostral lobes shorter, thicker, less strongly upturned, antero-lateral corners quadrate. Carapace almost vertically truncate behind, devoid of the flattened spines flanking the branchial regions. Eyes larger. Antenna 2, flagellum filiform, of about 18 elongate joints. Maxilliped 1, branchial leaflets (wanting in ♀) about 16 in number. Exopods of maxilliped 3 and pereopods more strongly

developed. In pereopod 4 the development of the exopod-bearing 2nd joint is strongly contrasted with the slenderness of the following joints. Uropods rather longer than in the ♀.

Seas of Great Britain and Ireland, from north of Shetland to Plymouth; W. coast of France: Mediterranean, Messina and Spezia, depths 11—19 m.

16. **N. stebbingi** Calm. 1904 *N. s.*, Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 p. 159, 176 t. 5 f. 91—93.

Near to *N. ossiani* (nr. 9), but with the last three pedigerous segments carrying paired serrated crests on the dorsal surface. Here also immediately below the pseudorostrum the concave antero-lateral margin bears a group of three curved spines, of which the upper and largest is very conspicuous. These, however, are perhaps also present in *N. ossiani*. L. ♂, 1.38 mm, ♀ unknown.

Gulf of Manaar; depth 4 m.

Genus dubium et species dubiae

Diops Paulson 1875 *D.*, Paulson, Unters. Krebse rot. Meer., v. 1 p. 129 | 1879 *Nannastacus*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 108 | 1880 *N.*, Kossmann, Reise Roth. Meer., Malac. pars 2 p. 90.

Probably a synonym of *Nannastacus* (p. 168), but (as described) distinguished by a slender 3-jointed second antenna in the female, and by having only a single apical filament on the palp of the first maxilla.

Diops parvulus Paulson 1875 *D. p.*, Paulson, Unters. Krebse rot. Meer., v. 1 p. 129 t. 21 f. 1—1r | 1880 *D. (Nannastacus) p.*, Kossmann, Reise Roth. Meer., Malac. pars 2 p. 90 | 1893 *D. p.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 306.

♀. L. 3.5 mm, larger than any accepted species of *Nannastacus*, and impossible to reconcile with *N. unguiculatus*, the apical lobes of the pseudorostrum not being serrate, the antero-lateral corners little instead of much outdrawn and the margin below little if at all serrate. The telsonic segment (as figured) differs from the accustomed form.

Nannastacus spinosus (Paulson) 1875 *Diops s.*, Paulson, Unters. Krebse rot. Meer., v. 1 p. 131 t. 21 f. 2 | 1880 ?*Nannastacus sarsii*, Kossmann, Reise Roth. Meer., Malac. pars 2 p. 90 t. 4 f. 4—9, t. 5 f. 1.

Kossmann's species, ♂, 2.75 mm long, has 2 filaments on the palp of the first maxilla, Paulson's specimen, only 1 mm long, was evidently not dissected. Both authors represent the 5th segment of the spinose pleon as uncommonly short.

4. Gen. *Platycuma* Calman

1905 *Platycuma* (Sp. un.: *P. holti*), Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 3, 30 | 1912 *P.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 164, 171.

Carapace depressed and expanded, overhanging the anterior pedigerous segments. Pedigerous segments except the first laterally expanded. Telsonic segment short. Eye wanting. Alimentary canal spirally coiled. Mouth-organs generally as in *Cumellopsis* (p. 177), but first maxilla with single filament to the palp, epipod of first maxilliped with a single branchial leaflet.

Female unknown.

1 species.

1. **P. holti** Calm. 1905 *P. h.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 10, 30 | 1912 *P. h.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v. p. 131.

Integument pellucid. Pseudorostral lobes slightly upturned meeting before the frontal lobe for one-eighth the length of the carapace, not as far

forward as the antero-lateral corners, truncate in dorsal view, antero-lateral margin concave between 2 convexities. Carapace large, depressed, quadrate in front, slightly widened to the convex hinder part of the carinate sides, hind margin trilobed, the middle lobe concealing the first 2 and partially the 3^d of the pedigerous segments. Of these the 4th and 5th and of the pleon the first 5 segments have each a pair of thin serrate dorsal crests. Pleon less than half the length of the body, the segments without lateral grooves; telsonic segment distally wider than its length, scarcely produced between the uropods. Eyelobe obsolete. Antenna 1, 1st joint equal to 2nd and 3^d combined, flagellum 3-jointed, shorter than 3^d joint of peduncle, 2-jointed accessory minute. Antenna 2, with sensory hairs very numerous, flagellum not reaching the pleon. Mandibles with about 9 spines in the spine-row, molar stout. Maxilliped 1, the 3^d joint suppressed. Maxillipeds 2, 3, 3^d joint distinct, but small. Peraeopod 1, 6th joint subequal to 5th, nearly thrice as long as 7th. Peraeopod 2, 7th

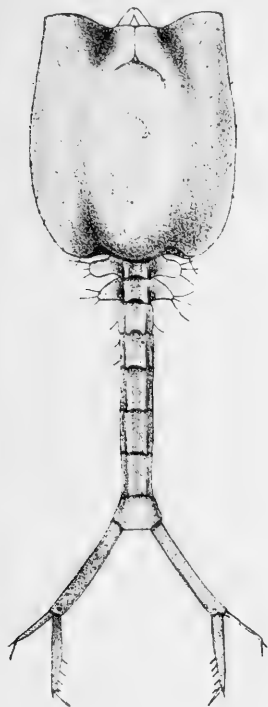


Fig. 121.
P. holti (♂) Calman.

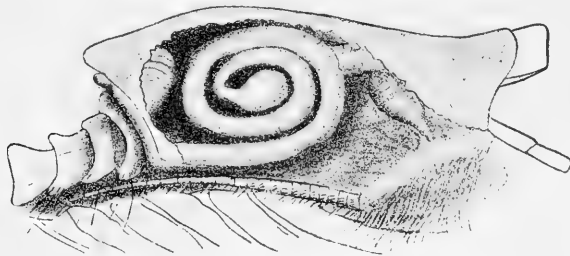


Fig. 122.
P. holti Calman, coiled intestine.

joint longer than 5th and over thrice as long as 6th. In the 3^d to 5th pairs the 5th joint more than twice as long as the 6th, the 7th very small but carrying a long curved spine or claw. Uropods three-fourths as long as the pleon, endopod about two-thirds as long as the peduncle, and exopod in the same relation to the endopod. L. 4.1 mm.

W. coast of Ireland, 77 miles W. N. W. of Achill Head, county Mayo, depth 699 m.

5. Gen. *Cumellopsis* Calman

1905 *Cumellopsis* (Sp. un.: *C. helgae*), Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 3, 28 | 1906 *C.*, Calman in: Mt. Stat. Neapel, v. 17 iv p. 418.

Carapace subovoid, more or less overhanging anterior pedigerous segments, antero-lateral corners well pronounced. Eyelobe small, without eye. First maxilla with two filaments to the palp. Branchial leaflets fairly developed.

2 species.

Synopsis of species:

- | | | |
|---|---|-----------------------|
| { | Peduncle of uropods nearly twice as long as the endopod | 1. <i>C. helgae</i> |
| { | Peduncle of uropods not nearly twice as long as the endopod | 2. <i>C. puritani</i> |

1. *C. helgae* Calm. 1905 *C. h.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 28 t. 2 f. 20—34 | 1906 *C. h.*, Calman in: Mt. Stat. Neapel, v. 17 iv p. 418.

Pseudorostral lobes slightly upturned, dorsally truncate, shortly produced in front of the small sightless eyelobe, front margin concave below with prominent antero-lateral angle leading to 2 teeth on the lower margin. Carapace elevated above the pedigerous segments, dorsal line slightly carinate to the rear, each side with broad shallow longitudinal depression, evanescent to the rear, bounded above and below by low rounded ridges, the lower sharpened at the antero-lateral corner. Pleon a little longer than the preceding part of the body, 5th segment about twice as long as the telsonic. Antenna 1, 1st joint shorter than 2nd and 3^d combined, flagellum 3-jointed, the 2-jointed accessory minute. Maxilliped 1 with 10 branchial leaflets on epipod of young ♂. Peraeopod 1, 6th joint a little shorter than 5th, nearly twice as long as 7th. Peraeopod 2, 7th joint little more than twice as long as 6th. In 3^d to 5th pairs the 5th joint rather long. Uropods considerably longer than 5th and telsonic segments of pleon combined, peduncle slender, nearly twice as long as endopod, exopod three-fourths as long as endopod. L. ♀ with developing oostegites, 5.8 mm, young ♂ 4.7 mm.

77 miles W. N. W. of Achill Head, county Mayo; depth 699 m.

2. *C. puritani* Calm. 1906 *C. p.*, Calman in: Mt. Stat. Neapel, v. 17 iv p. 418 t. 27 f. 10—12.

Very near to *Cumellopsis helgae*, but the size much less, antero-lateral corner less acute, lateral longitudinal depression of the carapace bounded below by a sharply marked ridge, the uropods with the peduncle shorter and rami longer, the endopod in immature male eight-ninths, and in adult male nearly three-fourths as long as the peduncle. L., adult ♂, 3.6 mm, immature ♂, 2.7 mm.

Mediterranean, near Capri, depth 950—1100 m.

6. Gen. *Cumella* O. Sars

1865 *Cumella* (Sp. un.: *C. pygmaea*), G. O. Sars in: Forh. Selsk. Christian., 1864 p. 198 | 1869 *C.*, A. M. Norman in: Rep. Brit. Ass., v. 38 p. 272 | 1879 *Spencebatea* (Sp. un.: *S. abyssicola*), A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 67 | 1879 *Cumella*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 93, 126 | 1900 *C.*, G. O. Sars, Crust. Norway, v. 3 p. 80 | 1905 *C.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 23 | 1911 *C.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 344 | 1912 *C.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 129, 164, 166.

Eyes, when present, confluent, median. Peduncle of uropods usually longer than the rami, the endopod usually longer than the exopod.

11 species accepted, 2 inadequately known.

Synopsis of accepted species:

- | | | | |
|---|---|--|-------------------------|
| 1 | { | Pedigerous segment 3 with submedian pair of upraised teeth | 1. <i>C. australis</i> |
| | | Pedigerous segment 3 without such teeth — 2. | |
| 2 | { | Eyes wanting; second antennae of female 3-jointed — 3. | |
| | | Eyes present; second antennae of female 2-jointed — 4. | |
| 3 | { | Eyelobe narrow | 2. <i>C. gracillima</i> |
| | | Eyelobe broad | 3. <i>C. molossa</i> |
| 4 | { | Telsonic segment longer than preceding segment — 5. | |
| | | Telsonic segment not longer than preceding segment — 6. | |

- 5 { Pseudorostrum long, the lobes meeting well in front of the eyelobe 4. *C. forficula*
 { Pseudorostrum short, the lobes scarcely meeting in front of the eyelobe 5. *C. clavicauda*
- 6 { Peduncle of uropods more than twice as long as the telsonic segment 6. *C. leptopus*
 { Peduncle of uropods less than twice as long as the telsonic segment — 7.
- 7 { Fifth pereopod with 5th joint very much longer than 6th — 8.
 { Fifth pereopod with 5th joint not very much longer than 6th — 9.
- 8 { Telsonic segment longer than peduncle of uropods . . 7. *C. hispida*
 { Telsonic segment shorter than peduncle of uropods . . 8. *C. serrata*
- 9 { Uropods with endopod not longer than exopod . . . 9. *C. laevis*
 { Uropods with endopod longer than exopod — 10.
- 10 { Pseudorostrum short, obtuse, horizontal 10. *C. pygmaea*
 { Pseudorostrum rather long, acute, somewhat upturned . 11. *C. limicola*

1. *C. australis* Calm. 1907 *C. a.*, Calman in: Nat. antarct. Exp., v.2 Crust. Cum. p.4 tf.7—13 | 1907 *C. a.*, Zimmer in: Zool. Anz., v.31 p.369 | 1911 *C. a.*, Calman in: Tr. zool. Soc. London, v.18iv p.344.

Pseudorostral lobes short, vertically truncate, meeting in front of the subglobular eyelobe, the front margin forming a semicircular concavity, the antero-lateral corners rounded, with strong serration continued a short space along the lower margin. Carapace large, compressed, dorsal line arched, serrate with about 20 large teeth and others, the foremost tooth overhanging the eyelobe. Pedigerous segment 3 produced dorsally into a pair of contiguous teeth overhanging the following segment but with their concave side forward. Pleon short, stout, cylindrical, with truncate end, 5th segment the longest. Maxilliped 3, 2nd joint with about 4 teeth on the medial margin, the distal one very strong. Pereopod 1 rather short and stout, 2nd joint with 5 strong teeth on lateral margin distally. Pereopod 3 with 2nd joint slender, curved, longer than remaining joints combined, 5th nearly twice as long as 4th and once and a half the 6th. Peduncle of uropods not quite twice as long as the telsonic segment, last two-thirds of medial margin with dwindling serration; endopod about two-thirds of peduncle, and exopod two-thirds of endopod. L. ♀ 2.9 mm, ♂ unknown.

Antarctic Circle.

2. *C. gracillima* Calm. 1905 *C. g.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app.1 p.23 t.1 f.5—14 | 1911 *C. g.*, Calman in: Tr. zool. Soc. London, v.18iv p.344.

♀. Pseudorostral lobes separated almost completely or completely by the narrow sightless eyelobe, bent almost straight upwards with spiniform process at the apex, obliquely truncate with front margin descending almost straight to the antero-lateral corner from which projects the largest of a series of some 10 pellucid spines. Branchial siphons separate, very long, spirally coiled. Carapace rather short, compressed, deep, with medio-dorsal carina and about 4 long spiniform teeth. Pedigerous segments 1, 2 very short, 4th with a forward curving dorsal spine (perhaps paired); side-plates not extensive. Pleon long and slender, much longer than preceding part of the body, 5th segment more than twice as long as the telsonic. Antenna 1 very long and slender, 1st joint longer than 2nd and 3d combined, flagellum

of 3 joints, the 3^d minute, accessory minute, 2-jointed. Antenna 2, 1st joint large, 2nd and 3^d small, each with apical seta, that on 2nd joint very long. Maxilliped 3, distal lateral angle of 2nd joint not produced. Peraeopod 1, 2nd joint slender, unarmed, 5th and 6th joints subequal; 3^d to 5th pairs rather long and slender, 5th joint about thrice as long as 6th. Peduncle of uropods long and slender, thrice the length of the telsonic segment, the rami subequal, a little over half the length of the peduncle. L. subadult, with developing oostegites, 2.75 mm.

♂. Seemingly near to *Cumella abyssicola* (p. 184). Pseudorostral lobes more oblique than in ♀, less acute, only 4 small teeth at antero-lateral corner. Carapace with dorsal edge smooth, without teeth. Flagellum of antenna 2 short. Peduncle of uropods about two and a half times as long as the telsonic segment, less than twice the length of the rami. L. 2.4 mm.

Off W. of Ireland, 77 miles W. N. W. of Achill Head, county Mayo, depth 699 m, 64 miles N. W. 1/2 W. of Cleggan Head, depth 364 m.

3. *C. molossa* Zimmer 1907 *C. m.*, Zimmer in: Zool. Anz., v. 31 p. 370 | 1911 *C. m.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 344.

Near *C. gracillima* (nr. 2), but less slender; the eye-lobe, though without pigment or lenses, large, broad and well-developed, carrying a pair of postero-lateral spines, the pseudorostral lobes not meeting in front of it, but keeping apart, along with the cornet-shaped siphons. The carapace not quite twice as long as the pedigerous segments combined, the antero-lateral margins receding, the lower margin serrulate to the end behind the larger denticulation; traces of medio-dorsal teeth are present. Pedigerous segments 4 and 5 each with a forward standing dorsal spine, the 5th with a spine on each side, being in this respect resembled by the first 5 pleon segments. Pleon little longer than preceding part of the body. Uropods broken. Colour white. L. ♀ about 4 mm, ♂ unknown.

German south Pole Exp., Winter station lat. 66° 2' S., long. 89° 38' E., depth 385 m.

4. *C. forficula* Calm. 1911 *C. f.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 341, 344, 345 t. 32 f. 1—6.

♀. Pseudorostral lobes well produced, acute, meeting in front of the prominent eyelobe: front margin receding, antero-lateral corner obtuse with a minute tooth. Carapace compressed, with scattered hairs, dorsal line convex, concave, and then briefly convex, front convexity with a forward curving spine, so also the hinder but not always. Pleon a little shorter than preceding part of the body, telsonic segment the longest, inflated, arched above and below, encreased in width backwards, obtusely extended between the uropods. Eye well pigmented. Antenna 1 slender, 1-jointed accessory flagellum minute. Peraeopods 3—5 slender, with elongate 5th joint, which in the 5th pair is four-fifths as long as the 2nd and more than twice the 4th joint. Uropods very short, less than telsonic segment even including their indistinctly defined apical spines; peduncle less than half as long as the telsonic segment, equal to the exopod, a little shorter than the endopod, spine in each case included, these spines curving inwards like the tail-forceps of an earwig. L. 1.7 mm.

♂. Rather more slender and elongate than the ♀; pseudorostral lobes shorter, with the upper edge concave; carapace with dorsal line more level and without spines, pleon segments 1—5 with lateral grooves; eye very

large. corneal lenses large and prominent; antenna 2, flagellum reaching end of body; uropods a little longer than the telsonic segment, the peduncle more than half the length of that segment. L. 1.85 mm.

Gulf of Siam, depths from 2 to 19 m.

5. **C. clavicauda** Calm. 1911 *C. c.*, Calman in: Tr. zool. Soc. London, v. 181v p. 341, 344, 346 t. 32 f. 7—10.

Pseudorostral lobes very short, seemingly not meeting in front of the eyelobe, truncate except for a small tooth at the medial angle, front margin short, nearly straight, antero-lateral corner rounded off. Carapace with dorsal line faintly sinuous, without spines. Pleon segments 1—4 with lateral groove; telsonic segment the longest, inflated, increasing in width backwards, hind margin broadly convex, scarcely extended between the uropods. Eye very large with 9 corneal lenses, one antero-median, pigment forming 2 small lateral spots, suggestive of paired eyes as in *Nannastacus* (p. 168). Antenna 1 nearly as in *C. forficula* (nr. 4) but shorter and stouter. Antenna 2, length of flagellum agreeing with lateral grooving of the pleon. Peraeopod 5, 5th joint little more than half the second and about once and a half as long as the 4th joint. Uropods similar to those of *C. forficula*, but rami less curved, peduncle about two-thirds as long as the telsonic segment. L. ♂ 1.9 mm. ♀ unknown.

Cruz Bay, St. Jan, Danish West Indies.

6. **C. leptopus** Calm. 1911 *C. l.*, Calman in: Tr. zool. Soc. London, v. 181v p. 341, 344, 347 t. 32 f. 11—14.

Pseudorostral lobes not produced to meet in front of the eyelobe, front margin concave, antero-lateral corner slightly prominent, rounded. Carapace with dorsal line very slightly sinuous, without spines. Pleon segments 1—5 with lateral grooves, telsonic segment less than two-thirds as long as the 5th, acutely extended between the uropods. Eye very large, 7 corneal lenses large and prominent, one antero-median, no conspicuous pigment. Antenna 1 rather slender, 1-jointed accessory flagellum minute. Peraeopod 2, 5th joint more than twice as long as 4th. Peraeopods 3—5 very slender; in 5th pair the 5th joint about three-fourths as long as the 2nd and 4 times as long as the 4th. Uropods long and slender, peduncle more than twice as long as the telsonic segment, endopod less than half the peduncle apart from its long apical spine; exopod about five-sixths of endopod, but with a still longer apical spine. L. ♂ 2.2 mm, ♀ unknown.

Cruz Bay, St. Jan, Danish West Indies.

7. **C. hispida** Calm. 1911 *C. h.*, Calman in: Tr. zool. Soc. London, v. 181v p. 341, 344, 347 t. 32 f. 15—18.

Scattered hairs on surface rather numerous. Pseudorostral lobes long, obliquely upturned, acute, meeting in front of the prominent eyelobe; front margin concave, antero-lateral corner quadrate. Carapace with slightly undulating dorsal line, a tooth behind the eye, and another before the middle. Pleon a little shorter than preceding part of the body, telsonic segment nearly as long as the 5th, not inflated, obtusely extended between the uropods. Eye pigmented. Antenna 1 rather slender, 1-jointed accessory flagellum minute. Peraeopods 3—5 slender, 5th pair with 5th joint four-fifths as long as 2nd, thrice the 4th and twice the 6th joint. Peduncle of uropods about three-quarters as long as the telsonic segment, a little shorter than the straight

endopod including its indistinctly separated apical spine; exopod three-quarters as long as endopod. L. ♀ 2.55 mm. ♂ unknown.

Gulf of Siam, depth 9 m

8. *C. serrata* Calm. 1911 *C. s.*, Calman in: Tr. zool. Soc. London, v. 181v p. 341, 344, 348 t. 32 f. 19—24.

♀. Surface without conspicuous hairs. Pseudorostral lobes, long, obliquely upturned, acute, meeting in front of the prominent eyelobe; front margin concave, antero-lateral corner with an acute tooth. Carapace compressed, dorsal line slightly convex, with about 6 procurved teeth, the last on a prominence at the back, separated from the rest by a shallow depression. Pleon equal to preceding part of the body, telsonic segment shorter than the 5th, not inflated, obtusely extended between the uropods. Eye with distinct lenses, without pigment. Antenna 1, 3^d joint a little shorter than 2nd. Peraeopod 1, 2nd joint little more than half as long as the following joints combined. Peraeopods 3—5 rather slender, 5th pair with 5th joint nearly as long as 2nd, more than twice the 4th and nearly twice the 6th joint. Peduncle of uropods longer by a fourth than telsonic segment, and by a third than the endopod without its apical spine; exopod less than two-thirds as long as the endopod. L. 2.2 mm.

♂. Pseudorostral lobes less produced than in ♀, obliquely truncate, upper edge slightly concave, front margin receding, antero-lateral corner rounded. Carapace with dorsal line nearly straight, without teeth. Pleon shorter than preceding part of the body, segments 1—5 with lateral grooves. Eye with a number of large and prominent lenses, but without pigment. Antenna 2, flagellum as long as the body. Peduncle of uropods longer by a half than the telsonic segment, the endopod less than two-thirds as long as the peduncle. L. 2.3 mm.

Cruz Bay, St. Jan, Danish West Indies.

9. *C. laevis* Calm. 1911 *C. l.*, Calman in: Tr. zool. Soc. London, v. 181v p. 341, 344, 350 t. 32 f. 25—27.

Surface without conspicuous hairs. Pseudorostral lobes short, truncate, meeting in front of the prominent eyelobe, front margin receding, antero-lateral corner rounded. Carapace with dorsal line horizontal, slightly sinuous, without teeth. Pleon shorter than preceding part of body, telsonic segment less than two-thirds as long as the 5th, the broadly rounded end little extended. Eye pigmented. Antenna 1 rather stout, 3^d joint shorter than 2nd, the 1-jointed accessory flagellum minute. Peraeopod 1, 2nd joint about half as long as remaining joints combined. Peraeopods 3—5 short, stout, 5th pair with 5th joint little more than half as long as the 2nd and about one half longer than the 4th and little longer than the 6th joint. Peduncle of uropods nearly twice as long as telsonic segment; endopod more than two-thirds as long as the peduncle, and subequal to exopod, each with the terminal spine distinct. L. ♀ 1.15 mm. ♂ unknown.

Gulf of Siam, depth 2—15 m.

10. *C. pygmaea* O. Sars 1865 *C. p.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 199 | 1869 *C. agilis* (♂), A. M. Norman in: Rep. Brit. Ass., v. 68 p. 272 | 1879 *C. pygmaea*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 94 t. 50—52 | 1897 *C. p.*, T. Scott in: Rep. Fish. Board Scotl., v. 15 p. 135 | 1897 *C. p.*, Ehrenbaum in: Wiss. Meeresunters., v. 21 p. 419 | 1900 *C. p.*, G. O. Sars, Crust. Norway, v. 3 p. 81 t. 55 | 1900 *C. p.*, Zimmer in: Fauna arctica, v. 1 p. 428, 438 | 1901 *C. p.*, A. O. Walker in: J. Linn.

Soc. London, v. 28 p. 294 | 1902 *C. p.*, G. S. Brady in: Nat. Hist. Tr. Northumb., v. 14 p. 95 | 1905 *C. p.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 23 | 1909 *C. p.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 311 p. 34 | 1911 *C. p.*, Calman in: Tr. zool. Soc. London, v. 181v p. 344.

♀. Pseudorostral lobes short, meeting in front of the eye, front margin straight and then deeply emarginate with acute antero-lateral angle. Carapace large and deep, rather compressed in front, dorsal line arched, carinate throughout, with 8 to 12 procurved denticles. Pleon narrow, a little shorter than preceding part of the body, telsonic segment shorter than the 5th, obtusely extended between the uropods. Eye rather conspicuous, circular. Antenna 1, accessory flagellum minute, 2-jointed. Peraeopod 1, 2nd joint distally strongly serrate on both margins, 5th joint as long as 6th and 7th combined; in 2nd pair 5th and 7th joints subequal, 6th half as long as 7th; in the 3 following pairs 5th joint only a little longer than 6th. Peduncle of uropods serrate on medial margin, considerably longer than the endopod, which is a little longer than the much narrower exopod. Colour, dark brown markings. L. 2.5 mm.



Fig. 123.

C. pygmaea (♂) Sars, front.

♂. Pseudorostral lobes shorter, antero-lateral corner less prominent. Carapace shallower, scarcely compressed in front, dorsal line nearly straight, unarmed. Eye very large, subquadrate, with 7 lenses, the front median one very prominent. Antenna 2, flagellum reaching the 3^d pleon segment. Peraeopods 1—4 with 2nd joint greatly dilated. L. 3 mm.

Norway, British Isles, Heligoland, Mediterranean; shallow water.

11. *C. limicola* O. Sars 1879 *C. l.*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 103 t. 53, 54 | 1911 *C. l.*, Calman in: Tr. zool. Soc. London, v. 181v p. 344.

♀. Integument pellucid, finely granular, hairy. Pseudorostral lobes subacute, obliquely upturned, meeting in front of the eye, the front margin receding, finely serrate above, the antero-lateral corner produced into a little tooth. The carapace in dorsal view triangular, dorsal line little arched, carinate, on the anterior half having 3 or 4 rather large, suberect teeth. Pleon shorter than preceding part of the body, telsonic segment shorter than 5th, longer than any of the others. Eye distinct. Antenna 1, peduncle of 3 subequal joints, 1-jointed accessory flagellum minute. Peraeopods 1 and 2 with the exopods unusually slight; 2nd joint of peraeopod 1 without strong serration, 7th joint little over half the length of the 6th. Uropods short, peduncle not longer than the telsonic segment, but considerably longer than the endopod, which in turn is longer than the narrow exopod. L. 3 mm.

♂. Larger but more slender and less hairy than the ♀, pseudorostral lobes shorter, more strongly serrate, the antero-lateral tooth much shorter; dorsal line of carapace horizontal, without carina or teeth. Pleon segments laterally grooved, with finely serrate carina for upper boundary of the groove. Eye of great size, of the 9 lenses 3 larger than the rest are conspicuous over the back and sides of the pseudorostral projections. Antenna 2, flagellum reaching end of pleon. Epipod of 1st maxilliped furnished with branchial leaflets which are wanting in the ♀. Peraeopods 1—4 with 2nd joint strongly developed. Peraeopod 5 more slender than in the ♀. Uropods rather more elongate than in the ♀, peduncle longer than the telsonic segment. L. 3.5 mm.

Mediterranean, depth 11—19 m.

C. abyssicola (Norm.) 1879 *Spencebatea a.*, A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 67 | 1893 *S. a.*, T. Stebbing in: Int. sci. Ser., v. 74 p. 306.

Pseudorostral lobes very short, broadly truncate. Carapace smooth, dorsal line a bold gradual curve, lateral margin inarched, exposing bases of the legs. Pedigerous segment 5 with ventral pair of spines and dorsal pair of spine-like points. Eye present. Uropods very elongate, peduncle much longer than the rami, endopod than the exopod. L. ♂ 4 mm. ♀ unknown.

W. of Donegal Bay, lat. 54° 53' N., long. 10° 56' W., depth 2487 m.

C. carinata (H. J. Hansen) 1887 *Campylaspis c.*, H. J. Hansen in: Vid. Meddel., v. 39 p. 207 t. 7 f. 4, 4a | 1900 ?*C. c.*, G. O. Sars, Crust. Norway, v. 3 p. 84 | 1905 ?*Cumellopsis c.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 28 | 1912 ?*Cumella c.*, Calman in: P. U. S. Mus., v. 41 p. 626.

Rather like *C. australis* (nr. 1). Pseudorostral lobes shortly produced, meeting in front of the prominent eye slightly upturned, apically subacute vertically truncate, front margin concave below, with serration of the corner continued a short space along the lower margin. Carapace somewhat compressed, dorsal line carinate throughout and denticulate with procurved teeth in series dwindling to the rear, numerous irregular tubercles on back and sides. Pedigerous segments 1—3 similarly armed with tubercles or spines, 4th and 5th with back smooth but sides armed. Pleon rather shorter than preceding part of body, segments 1—5 with upper front angle produced into a large rough tubercle. Telsonic segment of equal length and breadth. Eye having 4 rather widely separated prominent lenses. Uropods a little shorter than last 2 pleon segments combined, the peduncle as long as the 5th pleon segment, with dwindling serration, starting a little below base of medial margin; endopod two-thirds length of peduncle, exopod a little shorter. L., ♀ with oostegites rather large, 4.5 mm.

W. Greenland, Disco, Nordfjord, depth 47 m.

25. Fam. **Procampylaspididae**

1912 *Procampylaspidae*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 167.

Telson wanting. No distinct eye. First antenna with accessory flagellum very small. Mandible with narrow molar. Second maxilla normal. First maxilliped with seventh joint small, unexpanded. Second maxilliped with strong teeth projecting from concave margin of the terminal joint. Exopods on first four pairs of peraeopods of male, only on first two of female. No pleopods in either sex. Endopod of uropods simple.

1 genus.

1. Gen. **Procampylaspis** Bonnier

1896 *Procampylaspis* (Sp. typ.: *P. armata*), J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 541 | 1900 *P.*, G. O. Sars, Crust. Norway, v. 3 p. 83 | 1900 *P.*, T. Stebbing in: Willey, Zool. Results, pars 5 p. 611 | 1905 *P.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 22, 33 | 1906 *P.*, Calman in: Mt. Stat. Neapel, v. 17 iv p. 419 | 1907 *P.*, Zimmer in: Zool. Anz., v. 31 p. 372.

This being at present the only genus will have the characters of the family.

4 species.

Synopsis of species:

- | | | |
|-----|--|-----------------------|
| 1 { | Carapace with dorsal denticles numerous in male, wanting | 1. P. bonnieri |
| | in female | |
| | Carapace with dorsal denticles scanty in either sex — 2. | |

- 2 { Carapace bituberculate 2. *P. compressa*
 { Carapace not bituberculate — 3.
- 3 { Second maxilliped with terminal joint tridentate 3. *P. tridentata*
 { Second maxilliped with terminal joint quadridentate 4. *P. armata*

1. *P. bonnier* Calm. 1906 *P. b.*, Calman in: Mt. Stat. Neapel, v. 17 iv p. 422 t. 27 f. 21—27.

♀. Pseudorostral lobes subacutely produced for some distance in front of the evanescent eyelobe, the antero-lateral margin vertical to a small sinus and well marked but not far produced acute corner, which is microscopically serrate. Carapace a little more than two-fifths of the body's length, smooth, inflated, narrowed in front as seen from above, dorsal line arched, with slight depression to the rear. Pedigerous segments with side-plates expanded, smoothly rounded, 1st and 2nd dorsally raised into bifid laminar teeth procurved. Pleon segments smooth, the 5th widest at first third of its length. Peduncle of uropods as long as 5th pleon and telsonic segment combined; endopod as long as 5th pleon segment, two-thirds of the length of the peduncle, exopod little over three-fourths of the endopod. L. 2.3 mm.

♂. In general form as in *P. armata* (nr. 4), but the eyelobe is evanescent. There are a pair of small spines at tip of pseudorostral lobes above. Dorsal surface of carapace with group of about 10 curved spines, submedian, to the rear; spines in close order just over the lower margin from antero-lateral corner to the hind margin. Side-plates of last 4 pedigerous segments armed with marginal teeth, a pair of dorsal spines on each of the last 3 of these segments. First 4 pleon segments each with pair of forward sloping straight dorsal spines near the front and a sharp lateral spine. Antenna 2, last 2 joints of peduncle subequal. Exopod of uropods about four-fifths of the length of the endopod. L. 2.3 mm.

Mediterranean, near Capri; depth 950—1200 m.

2. *P. compressa* Zimmer 1907 *P. c.*, Zimmer in: Zool. Anz., v. 31 p. 372 | 1912 *P. compressus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 167.

♀. Pseudorostral lobes little produced, and without lateral sinus. Carapace not half the length of the body, a little compressed; eyelobe tuberculiform, carrying a pair of denticles; a submedian pair of processes behind the middle of the length of the carapace carry each on its summit a couple of procurved denticles. The pedigerous segments combined are about half as long as the carapace. The peduncle of the uropods is rather longer than the 5th pleon segment, the endopod about two-thirds as long as the peduncle and rather longer than the exopod. Colour yellowish white. L. ♀ with commencing marsupium, about 4 mm.

German South Pole Expedition, Winter station lat. 66° 2' S., long. 89° 38' E., depth 385 m.

3. *P. tridentata* Stebb. 1912 *P. t.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 167 t. 62 (14), tf. A, B.

Pseudorostral lobes a little upturned, meeting for a very short space in front of the narrow bidenticulate eyelobe, laterally forming a shallow sinus defined by a small tooth, which is followed a little way to the rear by a similar tooth on the lower margin. Carapace well arched, not actually carinate, with scattered hairs on the surface and behind the centre a little denticle. Pleon segments laterally carinate, 5th the longest, distally nar-

rowed, telsonic segment not longer than broad. Antenna 1, 1st joint longer than 2nd, 2nd than 3^d, principal flagellum 3-jointed, accessory 1-jointed. Antenna 2, 1st joint of the long flagellum knobbed at the base. Branchial leaflets numerous. Maxilliped 2, 2nd joint not twice as long as broad, the much curved 7th produced into a sharp point, the concave margin forming 3 strong teeth, of which the middle one is the longest. Maxilliped 3, 2nd joint stout, much longer than rest of limb, 3^d very small, 4th widened distally. Peraeopod 1, 2nd joint stout, not longer than rest of limb, 3^d unu-



Fig. 124.
P. tridentata
Stebbing, mandible.



Fig. 125.
P. tridentata (♂)
Stebbing, maxilliped 1.



Fig. 126.
P. tridentata
Stebbing, maxilliped 2.

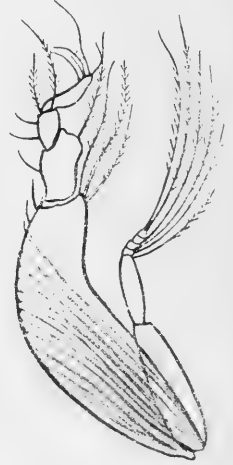


Fig. 127.
P. tridentata Stebbing,
maxilliped 3.

usually long, more than twice as long as broad, 6th longer than any except the 2nd. Peraeopod 2, 3^d joint short but outdrawn to a conspicuous apical spine. 7th as long as 4th and 5th combined, 4 times as long as the 6th. In the 3^d and 4th pairs the stout 2nd joint is much narrowed distally. Pedenuncle of uropods with finely serrate margins; endopod about two-thirds as long with 10 spines on the medial margin, and a much larger apical spine; the exopod much more slender and rather over two-thirds as long. L. ♂ 4.5 mm. ♀ unknown.

S. Africa, Cape Natal distant N. by E. 24 miles; depth 805 m.

4. *P. armata* Bonnier 1896 *P. a.* + *P. echinata*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 541 t. 29 f. 1a—r; p. 544 t. 29 f. 2a—t | 1905 *P. a.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 33 | 1906 *P. a.*, Calman in: Mt. Stat. Neapel, v. 17 iv p. 419 t. 27 f. 13—20 | 1912 *P. armatus*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 167.

♀. Pseudorostral lobes upturned, meeting with blunt apices for a short distance in front of the long narrow eyeless eyelobe, descending nearly vertically to a small sinus defined by a small blunt antero-lateral tooth. Carapace oval, dorsal line moderately arched, not carinate, but just behind the centre bearing a strong median tooth, the eyelobe on its slightly raised apex having a pair of small tubercles. First pedigerous segment raised to a transverse, procurved lamina with median bifid tooth overlapping hind margin of carapace; a similar less prominent tooth on second segment is not pro-

curved: fourth and fifth segments dorsally granular. Pleon segments except the telsonic granular all round, the 5th segment scarcely inflated anteriorly. Uropods (in Calman, fig. 14) of similar dimensions to those of *P. bonnieri*, but peduncle twice the length of the endopod (Calman, text). ♀ immature, 3.5 mm. Ovigerous ♀, with pleon segments nearly smooth.

♂. Antero-lateral corner scarcely produced; median dorsal tooth of carapace less prominent, sometimes bifid; a pair of small dorsal teeth are adjacent to the hind margin and on each side about 6 denticles occupy the last quarter of the length of the carapace a little way above the lower margin; the eyelobe is like that of ♀ (Calman); in Bonnier's *P. echinata* there is no eyelobe figured, and the carapace is quite smooth. Pedigerous segments 1, 2, not produced into dorsal teeth as in ♀, segments 2—5 each with a pair of dorsal tubercles, and having the side-plates expanded and margined with rows of spiniform teeth. Pleon segments 1—5 have the granules spiniform above and below the antennal groove. Last segment of peduncle in second antennae nearly twice as long as the preceding one. Peduncle of uropods considerably longer than the last two segments of pleon combined, fully twice as long as the endopod. L. adult ♂ nearly 6 mm. (Bonnier), 4 mm (Calman), immature ♂ (*P. armata*, Bonnier) scarcely 5 mm.

Bay of Biscay, depth 950 m; Irish Sea, 50 miles W. N. W. of Cleggan Head, 212 m; and 77 miles W. N. W. of Achill Head, county Mayo 699 m: Mediterranean, near Capri, 200—1100 m.

26. Fam. **Campylaspididae**

1878 & 1879 *Campylaspididae*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 466; v. 4 p. 74 | 1887 *C.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 8, 65 | 1900 *C.*, G. O. Sars, Crust. Norway, v. 3 p. 82 | 1900 *C.*, Zimmer in: Fauna arctica, v. 1 p. 431, 435 | 1912 *C.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 170.

Telson wanting. First antenna with accessory flagellum very small. Second antenna of female imperfectly developed. Mandible with molar slender, acute. First maxilla with two filaments to the palp or only one. Second maxilla an undivided plate. First maxilliped of four joints, the last minute. Second maxilliped with the terminal joint straight, spiniferous, or spine-like. Exopods on first four pairs of peraeopods of male, only on first two of female. No pleopods in either sex. Uropods with endopod simple.

1 genus.

1. Gen. **Campylaspis** G. O. Sars

1865 *Campylaspis* (Sp. typ.: *C. rubicunda*), G. O. Sars in: Forh. Selsk. Christian., 1864 p. 200 | 1866 *C.*, G. O. Sars in: Nyt Mag. Naturv., v. 15 p. 105 | 1878 & 1879 *C.*, G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 466; v. 4 p. 75 | 1887 *C.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 65 | 1896 *C.*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 538 | 1900 *C.*, G. O. Sars, Crust. Norway, v. 3 p. 83 | 1900 *C.*, Zimmer in: Fauna arctica, v. 1 p. 429 | 1905 *C.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 34 | 1911 *C.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 364 | 1912 *C.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 171.

This being at present the only genus, the characters of the family suffice for its definition.

23 species accepted.

Synopsis of species:

- 1 { Uropods broad 1. *C. platyuropus*
Uropods not broad — 2.
- 2 { Carapace smooth — 3.
Carapace not smooth — 9.
- 3 { Eyelobe obsolete 2. *C. nitens*
Eyelobe not obsolete — 4.
- 4 { Carapace less than half the total length of the body 3. *C. paeneglabra*
Carapace not less than half the total length — 5.
- 5 { Uropods with exopod not shorter than the endopod 4. *C. pulchella*
Uropods with exopod shorter than the endopod — 6.
- 6 { Eyelobe without corneal lenses — 7.
Eyelobe with corneal lenses — 8.
- 7 { Eyelobe broad, with whitish pigment 5. *C. pacifica*
Eyelobe longer than broad, eye indistinct 6. *C. orientalis*
- 8 { Peraeopod 2 with 7th joint longer than 5th and 6th
combined 7. *C. rubicunda*
Peraeopod 2 with 7th joint shorter than 5th and 6th
combined 8. *C. glabra*
- 9 { Carapace spinose 9. *C. spinosa*
Carapace not spinose — 10.
- 10 { Carapace with conspicuous carinae, not conspicuously
verrucose — 11.
Carapace verrucose, not conspicuously carinate — 16.
- 11 { Carapace with 3 pairs of lateral keels, the hindmost
bifurcate 10. *C. costata*
Carapace with only 2 pairs of lateral keels — 12.
- 12 { Eye wanting — 13.
Eye present — 14.
- 13 { Carapace with transverse keel 11. *C. vitrea*
Carapace without transverse keel 12. *C. ovalis*
- 14 { Eyelobe long, distally widened 13. *C. macrophthalma*
Eyelobe short, not distally widened — 15.
- 15 { Peraeopod 2 with 7th joint shorter than 5th and 6th
combined 14. *C. undata*
Peraeopod 2 with 7th joint longer than 5th and 6th
combined 15. *C. sulcata*
- 16 { Carapace with tubercles carinately combined — 17.
Carapace without tubercles carinately combined — 19.
- 17 { Eyelobe long, linguiform 16. *C. horrida*
Eyelobe very small — 18.
- 18 { Peraeopod 2 with 7th joint about equal to 4th, 5th
and 6th combined 17. *C. rostrata*
Peraeopod 2 with 7th joint barely longer than 5th . 18. *C. maculata*
- 19 { Carapace with few tubercles; peduncle of uropods
smooth 19. *C. affinis*
Carapace with numerous tubercles; peduncle of uropods
serrate — 20.
- 20 { Maxilliped 3 with 4th joint triangular, distally ex-
panded 20. *C. frigida*
Maxilliped 3 with 4th joint oblong — 21.

- 21 { Pleon segment 5 not transversely sulcate 21. *C. verrucosa*
 { Pleon segment 5 transversely sulcate — 22.
- 22 { Pleon segments without dorsal teeth 22. *C. nodulosa*
 { Pleon segments with dorsal teeth 23. *C. antarctica*

1. *C. platyuropus* Calm. 1911 *C. p.*, Calman in: Tr. zool. Soc. London, v. 181v p. 341, 364 t. 34 f. 25—29.

Pseudorostral lobes short, truncate. Carapace about half the whole length of the body, dorsal line behind the very small eyelobe convex, flanked by pair of dorso-lateral ridges curving towards it near the end. Pleon segments stout, slightly depressed, telsonic segment hexagonal, broader than long. Maxilliped 3 with well developed exopod, 2nd joint of endopod as long as next 3 joints combined, 4th greatly expanded, less than twice as long as broad, longer than 3 following joints combined. Peraeopod 1, 3^d joint with medial margin produced into a large thin triangular tooth. Peraeopod 2, 7th joint rather stout, shorter than 5th and 6th joints combined. Uropods remarkably broad and flattened, peduncle less than twice as long as the telsonic segment, the broad endopod three-fourths the length of the peduncle, the narrower exopod a little shorter. L. ♀ with developing oostegites, 1·8 mm. ♂ unknown.

Gulf of Siam, depth 9—19 m.

2. *C. nitens* Bonnier 1896 *C. n.*, J. Bonnier in: Ann. Univ. Lyon, v. 26 p. 538 t. 28 f. 4a—r | 1905 ? *C. n.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 10, 35.

Pseudorostral lobes short, obtuse. Carapace smooth, oval, dorsal line much arched, eyelobe very small. Telsonic segment very obtusely extended between the uropods. Eye wanting. Antenna 1, the 2nd joint of peduncle the shortest, flagellum of 3 or 4 joints, accessory a minute tubercle. Maxilla 1, palp with 2 filaments. Maxilliped 1 with some 20 branchial leaflets on the epipod. Maxilliped 2, terminal joint as it were embedded in the preceding and carrying 3 apical spines. Maxilliped 3, with denticulate medial margin to joints 3 to 6. Peraeopod 2, 7th joint rather stout or in ♀ slender (Calman), shorter than 2 preceding joints combined. Uropods as long as the pleon, peduncle twice as long as the endopod or more (Calman), exopod a little shorter than endopod. L. young ♂, a little less than 5 mm, immature ♀, 4·5 mm.

Bay of Biscay, depth 950 m; W. coast of Ireland, 50 miles W. N. W. of Tearaght Lighthouse, county Kerry, depth 570 m.

3. *C. paeneglabra* Stebb. 1912 *C. paeneglaber*, T. Stebbing in: Ann. S. Afr. Mus., v. 10v p. 172 t. 64.

Near to *C. glabra* (nr. 8), size, shape, mouth organs, pellucid spots on carapace, being in close agreement, but the S. African species is rather larger, the pseudorostral lobes are slightly upturned, the carapace is not quite smooth, the eyelobe is more elongate, showing no lenses, the 1st and 2nd pedigerous segments are not transversely ridged, the 2nd peraeopod has the 7th joint longer instead of shorter than the 5th and 6th joints combined, and the 5th peraeopods are more slenderly built, with the 2nd and 5th joints longer relatively to the other joints. L. ♂ about 4·3 mm. ♀ unknown.

S. Africa, Cape Natal N. by E. 24 miles, depth 805 m.

4. **C. pulchella** O. Sars 1871 *C. p.*, G. O. Sars in: Öfv. Ak. Förh., v. 28 nr. 6 p. 806 | 1873 *C. p.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 5 p. 14 t. 1 f. 14—16.

Pseudorostral lobes shortly and rather sharply produced in front of the prominent oblong eyelobe, the front margin receding without any sinus or antero-lateral corner. Carapace almost globular, smooth. 1st pedigerous segment only visible dorsally, 2nd raised into a prominent transverse crest, the last 3 successively much lower and narrower. Pleon thin and short, telsonic segment much shorter than the 5th, very slightly extended between the uropods, almost truncate. Eye indistinct. Antenna 1 long and slender, 3 joints of peduncle subequal. Peraeopods 3 to 5 very slender, with the 4th joint elongate. Uropods elongate, peduncle with medial margin serrulate, more than twice the length of the rami, of which the exopod is described and figured as slightly longer than the endopod. L. ♀ about 3 mm. ♂ unknown.

West Indies, Anguilla, depth 377—565 m.

5. **C. pacifica** O. Sars 1887 *C. p.*, G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 9, 66 t. 10 f. 6.

Pseudorostral lobes shortly produced in front of rather broad eyelobe, antero-laterally receding obliquely to a small sinus with the lower angle rounded off. Carapace dilated, more than half total length of the body, overarching the pedigerous segments, boldly arched with faint undulation of the dorsal line, otherwise smooth. Pleon segments 1—5 slightly carinate laterally, 5th the longest; telsonic segment obtusely extended between the uropods. Eye showing whitish pigment, without lenses. Uropods about equal in length to pleon segments 3 to 6 combined, the smooth peduncle more than twice as long as the endopod, which is longer than the more slender exopod. Colour brownish red. L. ♀ 3 mm. ♂ unknown.

Samboangan (Philippine Islands).

6. **C. orientalis** Calm. 1911 *C. o.*, Calman in: Tr. zool. Soc. London, v. 18 iv p. 341, 365 t. 35 f. 1—5.

Near to *C. rubicunda* (nr. 7). Pseudorostral lobes short, truncate in dorsal view, with faint lateral sinus. Ocular lobe longer than broad, eye indistinct. Pleon segments not depressed, not laterally carinate. Maxilliped 3, 2nd joint much longer than rest of joints combined, 3^d joint slightly produced on medial margin, 4th not wider than 3^d, not nearly as long as 5th and 6th combined, 6th much longer than 5th, none of the joints conspicuously serrate. Peraeopod 1, 4th joint not expanded, hardly longer than 5th. Peraeopod 2, 7th joint shorter than 5th and 6th combined, not very slender. Uropods with peduncle about twice as long as telsonic segment or as the endopod, with medial margin neither serrate nor spiniferous; endopod with numerous spines, decidedly longer than the exopod. Colour, traces of reddish purple. L. ♀ 5.5 mm. ♂ unknown.

Korea, depth 66 m.

7. **C. rubicunda** (Lilj.) 1855 *Cuma r.*, W. Liljeborg in: Öfv. Ak. Förh., v. 12 p. 121 | 1865 *Campylaspis r.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 202 | 1870 *C. r.*, G. O. Sars in: Forh. Selsk. Christian., 1869 p. 160, 161 | 1873 *C. r.*, G. O. Sars in: Svenska Ak. Handl., n. ser. v. 11 nr. 6 p. 10 t. 4 | 1879 *C. r.*, A. M. Norman in: Ann.

nat. Hist., ser. 5 v. 3 p. 73 | 1887 *C. r.*, H. J. Hansen in: Vid. Meddel., v. 39 p. 207, 209
 1897 *C. r.*, T. Scott in: Rep. Fish. Board Scotl., v. 15 p. 133 | 1900 *C. r.*, G. O. Sars,
 Crust. Norway, v. 3 p. 84, 108 t. 56, 57 | 1900 *C. r.*, Zimmer in: Fauna arctica, v. 1 p. 429,
 435 | 1909 *C. r.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2
 v. 3 II p. 35 | 1911 *C. r.*, Stappers in: Camp. arct. Orléans, Crust. Malac. p. 122 | 1912
C. r., Calman in: P. U. S. Mus., v. 41 p. 627.

♀ Pseudorostral lobes very short, but distally acute, antero-lateral corners obsolete. Carapace very large, inflated, half the length of the body, quite smooth. Pedigerous segments 1 and 2 raised to transverse procurved ridges, each with median produced point. Pleon segments short, depressed, telsonic segment slightly broader than long, obtusely extended. Eye distinct, semicircular, rather prominent, with 2 corneal lenses (Hansen). Maxilla 1 with single apical filament on the slender palp. Maxilliped 1, epipod with 10 branchial leaflets, terminal joint rather small, conical, with 1 apical setule. Maxilliped 2, the short terminal joint carrying 4 strong spines. Maxilliped 3 with the joints partly serrate, 4th joint considerably expanded, as long as 5th and 6th combined. Peraeopod 2, 7th joint slender, longer than 2 preceding joints combined. Uropods not very long, peduncle with serrate medial margin, twice as long as the endopod, which is a little longer than the exopod. Colour bright red except frontal lobe and adjacent part which are opaque white. L. 5 mm. ♂ Like ♀, except that it is more slender, pseudorostral lobes shorter, more obtuse; carapace shallower, epipod of maxilliped 1 with 18 branchial leaflets, uropods more elongate, peduncle fringed with plumose setae, not twice as long as the endopod, which carries more spines than in the ♀, and is more decidedly longer than the exopod. L. about 6 mm.

Lat. 75° 45' N., depth 1977 m; Greenland, Norway, Kullaberg, Kattegat, British Isles, Atlantic coast of N. America; depths from 22 to 188 m; Nova Zembla, 90 m.

8. *C. glabra* O. Sars 1879 *C. g.*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 77 t. 44—47 | 1900 *C. g.*, G. O. Sars, Crust. Norway, v. 3 p. 86 t. 58 | 1902 *C. g.*, G. S. Brady in: Nat. Hist. Tr. Northumb., v. 14 I p. 95 | 1905 *C. g.* (? *C. rubicunda* var.), Calman

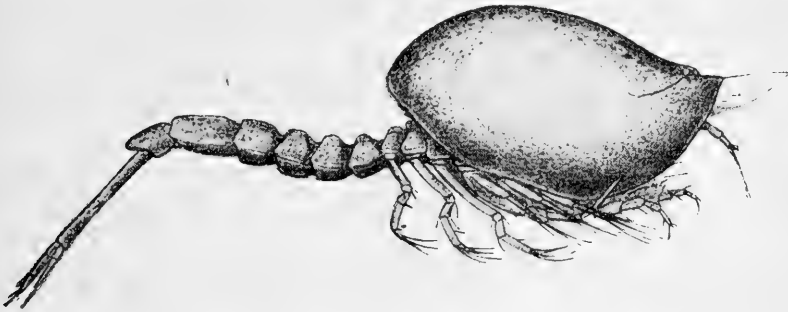


Fig. 128.
C. glabra (♀) Sars.

in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 34 | 1906 *C. g.*, Calman in: Mt. Stat. Neapel, v. 17 IV p. 423 | 1909 *C. g.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 II p. 35.

Very near to *C. rubicunda* (nr. 7), but considerably smaller and differing in colour, pedigerous segments 1 and 2 less strongly produced dorsally; eyelobe semioval, with 3 corneal lenses, pigment purple under opaque white

covering; terminal joint of maxilliped 1 more rudimentary; peraeopod 2 with terminal joint shorter instead of longer than the 2 preceding joints combined; peduncle of uropods little serrate on medial margin or distinctly (Calman), not twice as long as the endopod or a little more than twice (Calman) and little more than twice the exopod in the ♂, a little less than



Fig. 129.
C. glabra Sars, mandibles.



Fig. 130.
C. glabra Sars, maxilla 2.



Fig. 131.
C. glabra Sars, maxilliped 1.



Fig. 133.
C. glabra (♀) Sars, maxilliped 2.



Fig. 132.
C. glabra Sars, maxilliped 1, apex.

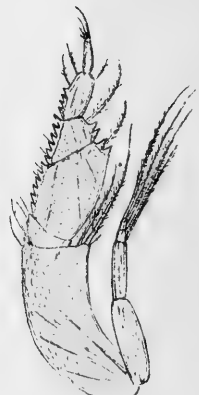


Fig. 134.
C. glabra Sars, maxilliped 3.

twice in the ♀. Colour whitish, sometimes with tinge of pink (Calman). L. ♀ scarcely exceeding 3 mm, ♂ nearly 4 mm.

Mediterranean, N. of England, W. coast of Ireland, Norway; depths 33—1100 m.

9. *C. spinosa* Calm. 1906 *C. s.*, Calman in: Mt. Stat. Neapel, v. 17 iv p. 412, 426 t. 28 f. 35—43.

♀. Pseudorostral lobes sharply upturned, meeting only just in front of the slitlike eyeless eyelobe, thence receding convexly to a scarcely indicated antero-lateral corner. Surface of carapace beset with spinules and armed on each side with about 8 strong spines reaching from the pseudorostral lobes to the rear; there are half a dozen long setae dorsally, and the lower margin anteriorly carries several procurved spines. First pedigerous segment almost completely concealed, each of the others having a pair of dorsal spines. Of the pleon segments the first 4 are similarly armed, the 5th has 3 dorsal and 2 postero-lateral spines; the telsonic segment is pentagonal, as broad as long, with 3 medio-dorsal spines and a subapical pair. The mouth-parts

distinguished from those of *C. rubicunda* (nr. 7) by molar of mandible rather longer and more slender, palp of maxilla 1 with 2 filaments, epipod of maxilliped 1 with only 3 branchial sacs. Maxilliped 2 with 3^d joint distinct, terminal joint carrying 3 spines. Maxilliped 3 with dentate margins, 4th joint little broader than 5th, equal in length to 5th and 6th joints combined; its apical setae very long. Peraeopod 2, 2nd joint less than a third of the total length, 5th with a serrate margin, 7th as long as 5th and 6th combined. Peduncle of uropods more than twice as long as the telsonic segment, indistinctly serrate; exopod a little longer than the endopod, about half as long as the peduncle, its long terminal spine serrate. L., subadult, 3.1 mm.

♂. Imperfectly known. Pseudorostrum more horizontal than in ♀, carapace less deep, the spines for the most part reduced to tubercles, but those on pleon segments even longer than in ♀. L. 3.7 mm.

Mediterranean, near Capri; depth 950—1100 m.

10. *C. costata* O. Sars 1865 *C. c.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 204 | 1872 *C. c.*, G. O. Sars in: Forh. Selsk. Christian., 1871 p. 272 | 1894 *C. c.*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 277 t. 12 f. 9 | 1897 *C. c.*, T. Scott in: Rep. Fish. Board Scotl., v. 15 p. 135 | 1897 *C. c.*, Ehrenbaum in: Wiss. Meeresunters., v. 21 p. 420 | 1900 *C. c.*, G. O. Sars, Crust. Norway, v. 3 p. 87 t. 60 | 1900 *C. c.*, Zimmer in: Fauna arctica, v. 1 p. 425, 435 | 1909 *C. c.*, A. M. Norman & G. S. Brady in: Nat. Hist. Tr. Northumb., ser. 2 v. 3 II p. 35.

Pseudorostral lobes meeting for a short space subacutely in front of the narrowly oval eyelobe; antero-lateral corner obtuse, slightly produced below a shallow sinus. Carapace much dilated, but not nearly half the length of the body, dorsal line evenly vaulted behind, sides sculptured with 3 pairs of distinct oblique folds or suberescence carinae, the hindmost at the middle bifurcating, so that a 4th fold nearly reaches the hind margin and then turns forward to rejoin the 3^d in the submedian line. Pedigerous segments 1, 2, slightly produced dorsally, each with median procurved or erect point; 5th pedigerous and first 4 pleon segments carry each a pair of adjacent dorsal tubercles. Telsonic segment pentagonal, length and breadth equal. Eye distinct, showing 4 lenses (in fig.). Maxilla 1, palp with 2 filaments. Maxilliped 1, terminal joint less rudimentary than usual in the genus. Maxilliped 2, terminal joint carrying 3 spines, the smallest intermediate. Maxilliped 3, 4th joint not greatly expanded, nor nearly as long as the next 2 joints combined. Peraeopod 2, 7th joint, scarcely longer (G. O. Sars in text) or rather shorter (in fig.) than 2 preceding joints combined. Peduncle of uropods unarmed in ♀, with the usual setae in ♂, not twice as long as the endopod, which is a little longer than the exopod; the latter in the ♀ is figured a little more, in ♂ a little less, than half the length of the peduncle. Colour pale reddish. L. ♀ 5 mm, ♂ 6.5 mm.

Norway, Heligoland, British Islands; depths 38—274 m.

11. *C. vitrea* Calm. 1906 *C. v.*, Calman in: Mt. Stat. Neapel, v. 17 iv p. 412, 425 t. 28 f. 28—34 | 1912 *C. v.*, Calman in: P. U. S. Mus., v. 41 p. 628.

Integument thin and semitransparent (much less so in supposed ♂). Pseudorostral lobes well produced in front of the short narrow eyeless eyelobe, apically acute, convex in dorsal outline, antero-laterally receding to a shallow sinus and obtuse corner. Carapace more than half the length of the body, with 2 pairs of finely serrate lateral oblique keels, the upper pair joined by a straight transverse keel about one-fourth of the length of the

carapace from its end; from the points of junction a pair of short keels run backwards to the lower lateral keels and are united in the rear by a broad bilobed ridge, thus enclosing a concave subquadrate area; the lateral areas between the lateral keels are also concave, and in front those keels are connected by a low vertical ridge. Pedigerous segments 1—3 have transverse dorsal crests, and the 4th and 5th have each a pair of cristiform dorsal teeth. Pleon segments 1—4 have paired dorsal, lateral, and ventro-lateral ridges (less prominent in supposed ♂), the 5th has the three pairs on its front half, but behind has only a medio-dorsal ridge and a lateral pair; the telsonic segment has a medio-dorsal ridge in front and a lateral pair. Appendages in general agreement with *C. macrophthalma* (nr. 13), but antenna 1, 2nd joint distinctly longer than 3^d, distal joints of pereopod 1 a little longer, 7th joint of pereopod 2 one-third of the total length of the limb, following pereopods rather longer and more slender than in *C. macrophthalma*, and the uropods longer, the peduncle more than two and a half times the length of the telsonic segment and over twice the length of the subequal rami. L. ♀ subadult, 4.7 mm; immature ♂?, 7.2 mm.

♀ Mediterranean, near Capri, depth 950—1100 m; ♂? lat. 40° 02' 00" N., long. 68° 50' 30" W., depth 985 m.

12. *C. ovalis* Stebb. 1912 *C. o.*, T. Stebbing in: Ann. S. Afr. Mus., v. 10 p. 171 t. 63.

Integument pellucid. Pseudorostral lobes shortly and subobtusely produced in front of a very small eyeless eyelobe. Carapace in dorsal aspect



Fig. 135.
C. ovalis (♂) Stebbing.

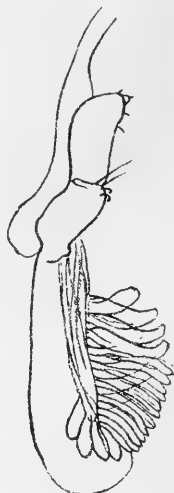


Fig. 136.
C. ovalis (♂) Stebbing, maxilliped 1.



Fig. 137.
C. ovalis Stebbing, maxilliped 2.

forming an oval broadest in front, the median part shallowly convex, the boundary constituted by a somewhat raised keel, below which the sides are strongly inflexed, with a second longitudinal keel near the lower border. Pedigerous segments 2—5 successively narrowed, with lateral angles more or less rounded. Fifth pleon segment the longest, telsonic pentagonal, the two combined rather shorter than peduncle of uropods. First antenna small,

flagellum 3-jointed, accessory minute. Upper lip with obtuse-angled margin. Maxilla 1, palp with 2 filaments. Maxilliped 1, terminal joint minute, at medial apex of preceding joint. Maxilliped 2 with long spear-ended spine attached to the short 3^d joint, 7th joint spine-like. Maxilliped 3 with very small 7th joint. Peraeopod 1 very like maxilliped 3, but with the joints longer. Peraeopod 2, 7th joint rather longer than the 5th. Peraeopod 3 with second joint long, much narrowed distally. Peduncle of uropods serrate, twice and two-thirds as long as the endopod, which is a little longer than the exopod. L. carapace of somewhat immature male, 3.3 mm long, 2.5 mm broad.

South Africa, Cape Natal N. by E. 24 miles, from depth of 805 m.

13. *C. macrophthalma* O. Sars 1879 *C. m.*, G. O. Sars in: Arch. Naturv. Kristian., v. 4 p. 87 t. 48, 49 | 1906 *C. m.*, Calman in: Mt. Stat. Neapel, v. 17 iv p. 424.

Pseudorostral lobes very shortly produced in front of the eyelobe, obtuse at apex, antero-lateral corner below the short sinus distinct. The carapace scarcely half the length of the body, sculptured with 2 pairs of lateral longitudinal keels, united in front by a transverse short keel. Eyelobe of unusual shape, linguiform, widest in front where it is prominent and occupied by the 3 corneal lenses of the eye. Pedigerous segment 1 partly concealed, the 3 following segments with dorsal outline almost forming a right angle with the carapace. Pleon segments laterally keeled. Antenna 1, with the 3 joints of the peduncle nearly subequal, flagellum much longer than any one of them. Maxilla 1, palp with 2 filaments. Maxilliped 1, the terminal joint carrying 3 short spines. Maxilliped 2, 2nd joint with peculiarly widened seta at apex of medial margin, terminal joint with 3 spines of which the intermediate is very small. Maxilliped 3, 4th joint only moderately widened, not so long as next 2 joints combined. Peraeopod 1, 4th joint much longer than the 5th. Peraeopod 2, 7th joint shorter than the 2 preceding joints combined. Peduncle of uropods serrate on both margins, twice as long as the serrate endopod, which is a little longer than the much narrower exopod. Colour bright red. L. ♀ 5 mm. ♂ not certainly known.

Mediterranean, at Messina, depth 38, near Capri, depth 130—200 m.

14. *C. undata* O. Sars 1865 *C. u.*, G. O. Sars in: Forh. Selsk. Christian., 1864 p. 205 | 1900 *C. u.*, G. O. Sars, Crust. Norway, v. 3 p. 88 t. 61 | 1900 *C. u.*, Zimmer in: Fauna arctica, v. 1 p. 430, 435.

Near to *C. costata* (nr. 10), but larger, carapace less strongly arched above, dorsal surface undulated with irregular protuberances and ridges, laterally sculptured with 2 very prominent rather flexuous carinae, the upper continued on to the side of the pseudorostral projection, the lower ending at the antero-lateral corner; peraeopod 2 with 7th joint not longer than the 5th; peduncle of uropods more than twice as long as the endopod. Colour pale carneous. L. ♀ 6 mm, ♂ 7 mm.

Norway, off the Lofoten Islands; depths 188—377 m.

15. *C. sulcata* O. Sars 1870 *C. s.*, G. O. Sars in: Forh. Selsk. Christian., 1869 p. 161 | 1872 *C. s.*, G. O. Sars in: Forh. Selsk. Christian., 1871 p. 272 | 1886 *C. s.*, G. O. Sars in: Norske Nordhavs-Exp., v. 6 nr. 15 p. 24 | 1900 *C. s.*, G. O. Sars, Crust. Norway, v. 3 p. 86 t. 59 | 1900 *C. s.*, Zimmer in: Fauna arctica, v. 1 p. 430, 435 | 1905 *C. s.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 35 | 1906 *C. s.*, Calman in: Mt. Stat. Neapel, v. 17 iv p. 424.

Pseudorostral lobes shortly and obtusely produced in front of the semi-circular eyelobe, antero-lateral corners obsolete below a faintly indicated sinus. Carapace very large, boldly arched, dorsal surface anteriorly undulated, lateral faces deeply sulcate between 2 projecting carinae which extend obliquely from the most prominent part of the branchial region to the base of the pseudorostral projection. Pedigerous segments 1, 2, elevated to procurved lamellae. Eye apparently having 4 lenses. Maxilla 1, palp with 2 filaments. Maxilliped 1, terminal joint extremely small. Maxilliped 2, terminal joint with 4 diverging spines. Maxilliped 3, 4th joint not nearly as long as 2 following joints combined. Peraeopod 2, 7th joint longer than 2 preceding joints combined. The 3 following pairs with medial margin of 5th joint serrate. Peduncle of uropods with medial margin serrate, nearly twice as long as endopod, and fully twice the exopod. Colour whitish, middle tinged with red. L. ♀ 4.5 mm, ♂ 5 mm.

Norway, Lofoten Islands, Hardanger and Trondhjem-Fjords, Husö, depths 150—470 m; W. coast of Ireland, depths 238—364 m; Mediterranean, depths 130—200 m.

16. *C. horrida* O. Sars 1870 *C. h.*, G. O. Sars in: Forh. Selsk. Christian., 1869 p. 162 | 1872 *C. h.*, G. O. Sars in: Forh. Selsk. Christian., 1871 p. 272 | 1894 *C. h.*, A. M. Norman in: Ann. nat. Hist., ser. 6 v. 13 p. 278 t. 12 f. 6, 7 | 1900 *C. h.*, G. O. Sars, Crust. Norway, v. 3 p. 89 t. 62 | 1900 *C. h.*, Zimmer in: Fauna arctica, v. 1 p. 429, 435 | 1905 *C. h.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 35 | 1912 *C. h.*?, Calman in: P. U. S. Mus., v. 41 p. 627.

Pseudorostral lobes shortly produced in front of the linguiform eyelobe, truncate, sinus and antero-lateral corners small but definite. Carapace large and tumid, surface uneven with conical protuberances dorsally crowded, laterally in 2 longitudinal rows, the lower forming an almost continuous carina, both connected in front by a transverse prominence continued on the side of the pseudorostral projection. Pedigerous segments 1, 2, raised to thin lamellae, 3^d to 5th of these and first 4 pleon segments each with dorsal pair of adjacent tubercles and sides acutely produced. Eye imperfectly developed. Maxilla 1, palp with 2 filaments. Peraeopod 2, 2nd joint much more than half as long as the rest of the joints combined, 7th joint subequal to the 5th. Peduncle of uropods coarsely serrate on both margins, about two and a half times as long as the endopod. Colour dark-red. L. ♀ about 6 mm, ♂ nearly 7 mm.

Norway, north to Lofoten Islands, depths 188—565 m; ?Japan, depth 1107 m.

17. *C. rostrata* Calm. 1905 *C. r.*, Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 10, 35 t. 2 f. 35—38 | 1910 *C. r.*, Calman in: Bull. Mus. Paris, p. 180.

Closely resembling *C. horrida* (nr. 16) but pseudorostral lobes strongly curved downwards to the acute apex, meeting in front of the very small eyeless eyelobe for a distance thrice its length; the dorsal surface of the carapace with only few tubercles; the 5th pleon segment carrying a pair of dorsal tubercles; peraeopod 2 with the 2nd joint only half as long as the rest of the joints combined, the 5th joint little longer than the 4th, the 7th as long as 4th, 5th, and 6th combined. L., ♀ with rudimentary oostegites, 5.25 mm.

W. coast of Ireland, depth 570 m; lat. 35° 24' 45" N., long. 10° 19' 7" W., 1205 m; coast of Sudan, 1056 m.

18. *C. maculata* Zimmer 1907 *C. m.*, Zimmer in: Zool. Anz., v. 31 p. 371 | 1909 *C. m.*, Zimmer in: Ergeb. Schwed. Südp.-Exp., v. 6 nr. 3 p. 13 t. 5 f. 69—83.

Not unlike *C. horrida* (nr. 16) and nearly allied to *C. nodulosa* (nr. 22). Pseudorostral lobes produced to a distance not longer than the tuberculiform, apparently eyeless eyelobe; a sinus well developed. The carapace more than half the length of the body, beset with numerous tubercles, combined chain-wise in three lateral lines, 2 close together and parallel to the lower margin, the 3^d at a somewhat greater distance. Pedigerous segments 1, 2, are not raised dorsally. The pleon segments are without tubercles. Upper lip, mandibles and other mouth-organs as in *C. nodulosa*. Maxilliped 1, terminal joint comparatively large, piriform. Maxilliped 2, terminal joint with 3 apical spines. Maxilliped 3, 4th joint not very broad or very long, lateral margin produced to a tooth. Peraeopod 1, 2nd joint longer than the rest combined, 7th about two-thirds as long as the 5th or 6th. Peraeopod 2 as in *C. horrida*. Peraeopod 5 small, fully developed. Peduncle of uropods with margins weakly serrate, rather more than twice as long as the endopod, which is a little longer than the exopod. Colour yellowish, spotted freely with red-brown. L. about 5 mm.

South Georgia, depth 75 m.

19. *C. affinis* O. Sars 1870 *C. a.*, G. O. Sars in: Forh. Selsk. Christian., 1869 p. 160 | 1900 *C. a.*, G. O. Sars, Crust. Norway, v. 3 p. 91 t. 64 | 1900 *C. a.*, Zimmer in: Fauna arctica, v. 1 p. 429, 435 | 1912 *C. a.*?, Calman in: P. U. S. Mus., v. 41 p. 628.

Named for affinity to *C. rubicunda* (nr. 7), but with some striking differences. Pseudorostral lobes meeting for a short space in front of the oval eyelobe, obtuse at apex, descending to a small sinus and feebly marked antero-lateral corner. Carapace not half the length of the body, moderately inflated, with a few low dorsal tubercles anteriorly. Pedigerous segments 1, 2, slightly elevated dorsally, following segments smooth, except that in the ♂ pleon segments 1—5 have the usual groove for the long 2nd antenna. Maxilla 1 with 2 filaments to the palp as in *C. verrucosa* (nr. 21), not in *C. rubicunda*. Maxilliped 1, terminal joint less rudimentary than usual, oval fusiform, margin ciliated, apex with 2 unequal spines. Maxilliped 2 with distally widened seta at apex of medial margin of 2nd joint, 6th of quite moderate dimensions, 7th carrying 3 spines, the intermediate the smallest. Peraeopod 2, 7th joint longer than 2 preceding joints combined. Uropods rather slender, peduncle with unserrated margins, about twice the length of the endopod in the ♀, but less than that in the ♂; endopod in the ♀ only just longer than the exopod, but in the ♂ considerably longer, with spines on medial margin numerous. Colour pale red, more or less fleeting in spirit. L. ♀ 5.5 mm, ♂ 6 mm.

Norway, Lofoten Islands, depths 377—471 m; ? U. S. A., off Martha's Vineyard, depths 65—70 m.

20. *C. frigida* H. J. Hansen 1908 *C. f.*, H. J. Hansen in: Résult. Voy. Belgica, Schiz. Cum. p. 16 t. 3 f. 2a—2n.

Near to *C. verrucosa* (nr. 21) and *C. antarctica* (nr. 23). Integument very thin and flexible. Pseudorostral lobes meeting for a short space in front of the prominent, parallel-sided, apparently sightless eyelobe, obtuse at apex, descending to a small sinus and feeble antero-lateral corner. Carapace covered with unequal tubercles seemingly in symmetrical arrangement.

Pleon segment 5 with conspicuous transverse impression behind the middle. Antenna 1, 2nd joint shorter than 1st, 3^d than 2nd, flagellum of 4 joints, 4th twice as long as the very short 1st, 3^d longer than the long 2nd, accessory a small oblong joint. Maxilliped 3 with 4th joint abnormal, triangular, so strongly expanded on medial side that it is as broad as long, most of the very long distal margin concave and free, the 5th joint attached to its lateral apex. Peraeopod 1, 4th joint little longer than 5th. Peraeopod 2, 7th joint longer than 5th. Peduncle of uropods twice as long as the endopod, which is slightly longer than the exopod. L., ♀ with brood, 6 mm. ♂ unknown.

Lat. 70° 48' S., long. 91° 54' W., a single specimen.

21. *C. verrucosa* O. Sars 1866 *C. v.*, G. O. Sars in: *Nyt Mag. Naturv.*, v. 15 p. 105 | 1894 *C. v.*, A. M. Norman in: *Ann. nat. Hist.*, ser. 6 v. 13 p. 278 t. 12 f. 8 | 1900 *C. v.*, G. O. Sars, *Crust. Norway*, v. 3 p. 90 t. 63 | 1900 *C. v.*, Zimmer in: *Fauna arctica*, v. 1 p. 430, 435 | 1905 *C. v.*, Calman in: *Sci. Invest. Fish. Ireland*, 1904 app. 1 p. 35 | 1906 *C. v.*, Calman in: *Mt. Stat. Neapel*, v. 17 iv p. 424.

Pseudorostral lobes shortly and obtusely produced in front of the oblong oval eyelobe, sinus and antero-lateral corner well marked. Carapace tumid, covered with tubercles more or less symmetrically arranged. Pedigerous segments and pleon segments as in *C. horrida* (nr. 16). The imperfectly developed eye, antenna and mouth-organs also agree with the species just named, but the 7th joint of peraeopod 2 is comparatively narrower. Peduncle of uropods less coarsely serrate, not nearly twice as long as the endopod. Colour whitish with greenish tinge (G. O. Sars), all speckled with deep brown or black (A. M. Norman). L. ♀ 5.5 mm, ♂ 6.5 mm.

Norway, depths 113—565 m; W. coast of Ireland, depth 219—570 m; Mediterranean, near Capri, depth 200—1100 m.

22. *C. nodulosa* O. Sars 1887 *C. n.*, G. O. Sars in: *Rep. Voy. Challenger*, v. 19 pars 55 p. 9, 68 t. 11.

Integument strongly indurated. Pseudorostral lobes produced obtusely in front of the rather large oval but apparently eyeless eyelobe, sinus and antero-lateral corner well marked. Carapace very large, not overhanging the pedigerous segments, scarcely half the length of the body, without furrows or carinae but more or less symmetrically covered with spaced tubercles. Pedigerous segments somewhat raised dorsally. Pleon segments separated by deep constrictions, lightly carinate laterally without dorsal teeth, the 5th with transverse furrow behind the middle. Antenna 1, 2nd joint shorter than 1st, 3^d than 2nd, flagellum of 3 joints, the 3^d minute, the minute accessory 2-jointed. Upper lip broadly quadrate, emarginate behind, projecting in front between the 2-jointed 2nd antennae as a rounded protuberance. Mandibles with long narrow molar, left member with accessory cutting plate and 4 spines, right with 6 spines and no accessory plate. Maxilla 1, with palp long, carrying 2 filaments. Maxilliped 1, with 9 branchial leaflets on the epipod. Maxilliped 2, with 3 spines on the terminal joint, the intermediate the smallest. Maxilliped 3, 4th joint with lateral margin produced to a tooth, medial serrate, perhaps in this respect differing from *C. maculata* (nr. 18). Peraeopod 1, 2nd joint not longer than the rest combined, 7th about two-thirds as long as 5th or 6th. Peraeopod 2, 4th and 5th joints each with bidentate apex (wanting in *C. horrida* (nr. 16) and *C. maculata* (nr. 18), 7th joint equal in length to the 5th. Peraeopod 5 wanting, probably only as a juvenile character. Peduncle of uropods slightly serrate on both margins;

endopod three-fourths as long as the peduncle, exopod a little shorter. L. nearly 5 mm, adult unknown.

Kerguelen Island, depth 232 m.

23. **C. antarctica** Calm. 1907 *C. verrucosa* var. *a.*, Calman in: Nat. antaret. Exp., v. 2 Crust. Cum. p. 5 t. f. 14—16, tf. 4 | 1907 *C. v. var. a.*, Zimmer in: Zool. Anz., v. 31 p. 370.

As compared with *C. verrucosa* (nr. 21), hairs on surface much longer, sides of carapace more flattened or sulcate over an oblique area as in *C. sulcata* (nr. 15), dorsal tubercles of pleon segments 1—5 replaced by sharp teeth pointing backwards, with a decided instead of faintly indicated pair of dorsal teeth on each segment, 5th segment with post-median constriction more strongly marked, hind margin dorsally extended into a curved median tooth serrate on the upper margin, peduncle of uropods more strongly serrate, the teeth on medial margin spiniform, curved, irregular in size; medial margin of endopod more distinctly serrated. L. adult ♀ 5.35 mm.

Winter quarters of the British Expedition, and of the German South-pole Exp., lat. 66° 2' S., long. 89° 38' E., depth 385 m.

Genera Cumaceorum incertae sedis

Gen. *Calyptoceros* Huxley

1856 *Calyptoceros*, Huxley in: Quart. J. geol. Soc., v. 121 p. 34.

Evidently having a distinct telson, and, judging by the name, probably an adult male with long antennae.

British Channel.

Gen. *Olbia* Marcusen

1867 *Olbia* (non Stål, Hemiptera, 1862), Marcusen in: Arch. Naturg., v. 331 p. 359 (descr. nulla).

Black Sea.

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Nomenclator generum et subgenerum

- Adiastylis** T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 148. 1912. Sp.: *A. acanthodes*.
- Alauna** Goodsir in: Edinb. new phil. J., v. 34 p. 120, 127. 1843. Sp.: *A. rostrata*.
- Anchicolurus** T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 176. 1912. Sp.: *A. occidentalis*.
- Astacus** Borlase, Nat. Hist. Cornwall, p. 274. 1758. Sp.: *A. verus*.
- Astaricilla** Dalzell, Powers Creator, v. 1 p. 224. 1851. Sp.: *A. caudata*.
- Asteracilla** [pro: *Astaricilla* Dalzell 1851] Dalzell, Powers Creator, v. 1 p. 226. 1851.
- Bathycuma** H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c p. 55. 1895. Sp.: *B. elongata*.
- Bathylamprops** Zimmer in: Ergeb. Tiefsee-Exp., v. 8 p. 158, 173. 1908. Sp.: *B. calmani*.
- Bodotria** [pro: *Bodotria* Goodsir 1843] P. J. Beneden in: Mém. Ac. Belgique, v. 33 [no. 3] p. 73. 1861.
- Bodotria** Goodsir in: Edinb. new phil. J., v. 34 p. 120, 128. 1843. Sp.: *B. arenosa*.
- Brachydiastylis** T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 176. 1912. Sp.: *B. resimus*.
- Calyptoceros** Huxley in: Quart. J. geol. Soc., v. 12 i p. 36. 1856.
- Campylaspis** G. O. Sars in: Forh. Selsk. Christian., p. 200. 1865. Sp.: *C. rubicunda*, *C. costata*, *C. undata*.
- Cancer** Linné, Syst. Nat., ed. 10 p. 344, 625. 1758. Sp.: *C. cursor*, *C. raninus*, *C. mutus*, *C. minutus*, *C. ruricola*, *C. vocans*, *C. craniolaris*, *C. philargius*, *C. rhomboides*, *C. maculatus*, *C. pelagicus*, *C. nucleus*, *C. lactatus*, *C. maenas*, *C. depurator*, *C. feriatus*, *C. granulatus*, *C. pagurus*, *C. chabrus*, *C. araneus*, *C. cuphaeus*, *C. muscosus*, *C. personatus*, *C. maja*, *C. longimanus*, *C. horridus*, *C. cristatus*, *C. superciliosus*, *C. cornutus*, *C. longipes*, *C. spinifer*, *C. cruentatus*, *C. hepaticus*, *C. calappa*, *C. grapsus*, *C. aeneus*, *C. punctatus*, *C. dorsipes*, *C. symmysta*, *C. bernhardus*, *C. diogenes*, *C. gammarus*, *C. astacus*, *C. carcinus*, *C. pennaceus*, *C. squilla*, *C. crangon*, *C. carabus*, *C. cancharus*, *C. pilosus*, *C. norvegicus*, *C. homarus*, *C. arctus*, *C. mantis*, *C. scyllarus*, *C. pulex*, *C. locusta*, *C. salinus*, *C. stagnalis*.
- Caspiocuma** G. O. Sars, Crust. Norway, v. 3 p. 73. 1900. Sp.: *C. campylaspoides*.
- Ceratocuma** Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 11, 37. 1905. Sp.: *C. horrida*.
- Chalarostylis** A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 65. 1879. Sp.: *C. elegans*.
- Colurostylis** Calman in: Tr. zool. Soc. London, v. 18 iv p. 342, 376. 1911. Sp.: *C. pseudocuma*.
- Condylura** Illiger, Prodr. Mam. Av., p. 125. 1811. Sp.: *C. cristata*, *C. longicaudata*. Mamm.
- Condylura** Latreille in: G. Cuvier, Règne an., ed. 2 v. 4 p. 153. 1829. Sp.: *C. Dorbignyi*.
- Condylurus** [pro: *Condylura* Latreille 1829] H. Milne-Edwards, Hist. nat. Crust., v. 3 p. 553. 1840.
- Cuma** [Calonne], Mus. Calonn., p. 35. 1797. Sp.: *C. Aulica*, *C. Moro*, *C. Prismatica*. Moll.

- Cuma** H. Milne-Edwards in: Ann. Sci. Nat., v. 13 p. 294. 1828. Sp.: *C. Audouinii*.
- Cumella** G. O. Sars in: Forh. Selsk. Christian., p. 198. 1865. Sp.: *C. pygmaea*.
- Cumellopsis** Calman in: Sci. Invest. Fish. Ireland, 1904 app. 1 p. 11, 28. 1905. Sp.: *C. Helgae*.
- Cumopsis** G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 465, 511. 1878. Sp.: *C. Goodsiri*.
- Cyclapis** [pro: *Cyclaspis* G. O. Sars 1865] G. O. Sars in: Forh. Selsk. Christian., p. 206. 1865. Sp.: *C. longicaudata*.
- Cyclaspis** [pro: *Cyclaspis* G. O. Sars 1865] H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c p. 51. 1895.
- Cyclaspis** G. O. Sars in: Forh. Selsk. Christian., p. 207. 1865. Sp.: *C. longicaudata*.
- Cyclaspoides** Bonnier in: Ann. Univ. Lyon, v. 26 p. 530. 1896. Sp.: *C. Sarsi*.
- Cyma** pro: *Cuma* H. Milne Edwards 1828 l. Agassiz, Nomencl. zool., Index p. 108, 112. 1846.
- Cymatopsis** pro: *Cumopsis* G. O. Sars 1878 Rye in: Zool. Rec., v. 17 Index p. 4 1881.
- Cyrianassa** pro: *Venilia* Bate 1856 Bate in: Ann. nat. Hist., ser. 2 v. 18 p. 187. 1856.
- Diastylis** Say in: J. Ac. Philad., v. 1 II p. 313. 1818. Sp.: *D. arenarius*.
- Diastylodes** G. O. Sars, Crust. Norway, v. 3 p. 60. 1900. Sp.: *D. serrata*, *D. buplicata*.
- Diastylopsis** S. I. Smith in: Rep. geol. Surv. Canada, 1878—79 p. 215 B. 1880. Sp.: *D. Dawsoni*.
- Die** T. Stebbing in: Ann. S. Afr. Mus., v. 6 iv p. 415. 1910. Sp.: *D. calmani*.
- Diops** Paulson, Unters. Krebse rot. Meer., v. 1 p. 128. 1875. Sp.: *D. parvulus*, *D. spinosus*.
- Ekdiastylis** T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 155. 1912. Sp.: *E. hexaceros*.
- Ekleptostylis** T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 146, 153. 1912. Sp.: *E. walkeri*.
- Eocuma** Marcusen in: Hilgendorf in: SB. Ges. Fr. Berlin, p. 170. 1894. Sp.: *E. hilgendorfi*.
- Eudora** Péron & Lesueur in: Ann. Mus. Paris, v. 14 p. 326. 1809. Sp.: *E. undulosa*. Acaleph.
- Eudora** Subgen. Haan in: Th. Siebold, Fauna Japon., p. 22. 1833. Sp.: *Cancer (E.) tenax*, *C. (E.) impressus*, *C. (E.) incisus*. Decap.
- Eudora** Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 457. 1856. Sp.: *E. truncatula*.
- Eudorella** pro: *Eudora* Bate 1856 A. M. Norman in: Rep. Brit. Ass., v. 36 p. 194, 197 nota. 1867.
- Eudorellopsis** G. O. Sars in: Forh. Selsk. Christian., nr. 18 p. 56. 1883. Sp.: *E. deformis*.
- Gammarus** J. C. Fabricius, Syst. Ent., p. 418. 1775. Sp.: *G. locusta*, *G. pulex*, *G. linearis*, *G. salinus*, *G. stagnalis*.
- Gaussicuma** Zimmer in: Zool. Anz., v. 31 p. 368. 1907. Sp.: *G. vanhoeffeni*.
- Goniacis** G. O. Sars in: Forh. Selsk. Christian., 1864 p. 159. 1865.
- Gynodiastylis** Calman in: Tr. zool. Soc. London, v. 18 iv p. 342, 367. 1911. Sp.: *G. carinata*, *G. laevis*, *G. costata*, *G. bicristata*.
- Halia** Risso, Hist. Eur. mérid., v. 4 p. 52. 1826. Sp.: *H. hélicoides*. Moll.
- Halia** Bate in: Ann. nat. Hist., ser. 2 v. 17 p. 458. 1856. Sp.: *H. trispinosa*.
- Hemilamprops** G. O. Sars in: Forh. Selsk. Christian., nr. 18 p. 11, 55, 56. 1883. Sp.: *H. assimilis*.
- Hemileucon** Calman in: Tr. zool. Soc. London, v. 18 i p. 2, 37. 1907. Sp.: *H. uniplicatus*, *H. comes*.
- Heterocuma** Miers in: P. zool. Soc. London, p. 22, 57. 1879. Sp.: *H. sarsi*, *H. s. var. granulata*.
- Heterocyma** pro: *Heterocuma* Miers 1879 Rye in: Zool. Rec., v. 16 Index p. 5. 1881.

- Heteroleucon** Calman in: Tr. zool. Soc. London, v. 18 i p. 2, 34. 1907. Sp.: *H. akaroënsis*.
- Holostylis** T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 133, 146. 1912. Sp.: *H. helleri*, *H. gayi*.
- Iphinoë** [pro: *Iphinoë* Bate 1856] G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 496. 1878.
- Iphinoë** pro: *Halia* Bate 1856 Bate in: Ann. nat. Hist., ser. 2 v. 18 p. 187. 1856.
- Iphinoë** Subgen. H. & A. Adams, Gen. Moll., v. 1 p. 280. 1858. Sp.: *Trichotropis* (*I.*) *ciliata*, *T. (I.) unicarinata*.
 (pt. containing *I. appendicula* Moll. 1854 vide Dall, note Jan. 12, 1924.)
- Iphithoë** [pro: *Iphinoë* Bate 1856] A. M. Norman in: Rep. Brit. Ass., v. 36 p. 197, 201. 1867.
- Lamprops** G. O. Sars in: Nyt Mag. Naturv., v. 12 p. 236, 239. 1863. Sp.: *L. fasciata*.
- Lampros** [pro: *Lamprops* G. O. Sars 1863] Meinert in: Naturh. Tidsskr., ser. 3 v. 11 p. 187. 1877.
- Leptocuma** G. O. Sars in: Svenska Ak. Handl., v. 11 nr. 5 p. 24. 1873. Sp.: *L. Kinbergii*.
- Leptocyma** pro: *Leptocuma* Sars 1874 Rye in: Zool. Rec., v. 11 p. 552. 1876.
- Leptostylis** G. O. Sars in: Nyt Mag. Naturv., v. 16 p. 343. 1869. Sp.: *L. longimana*, *L. villosa*.
- Leucon** Kröyer in: Naturh. Tidsskr., ser. 2 v. 2 p. 181, 208. 1846. Sp.: *L. emarginatus*, *L. Nasica*, *L. deformis*.
- Leuconopsis** A. O. Walker in: Rep. Brit. Ass., v. 66 p. 419. 1896. Sp.: *L. ensifer*.
- Makrokylindrus** T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 150. 1912. Sp.: *M. josephinae*, *M. erinaceus*, *M. dubius*, *M. cingulatus*, *M. serricauda*, *M. fragilis*.
- Nannastacus** Bate in: Ann. nat. Hist., ser. 3 v. 15 p. 86. 1865. Sp.: *N. binoculoides*.
- Nannasticus** [pro: *Nannastacus* Bate 1865] A. M. Norman in: Rep. Brit. Ass., v. 38. 1868. p. 259. 1869.
- Olbia** Stål in: Ent. Zeit. Stettin, p. 118. 1862. Sp.: *O. caprina*. Hem.
- Olbia** Marcusen in: Arch. Naturg., v. 33 i p. 359. 1867. nom. nud.
- Oniscus** Linné, Syst. Nat., ed. 10 p. 636. 1758. Sp.: *O. asilus*, *O. oestrum*, *O. psora*, *O. physodes*, *O. entomon*, *O. ceti*, *O. marinus*, *O. scopulorum*, *O. aquaticus*, *O. asellus*, *O. armadillo*.
- Oxyurostylis** Calman in: P. U. S. Mus., v. 41 p. 605, 666. 1912. Sp.: *O. smithi*.
- Pachystylis** H. J. Hansen in: Ergeb. Plankton-Exp., v. 2 G. c p. 58. 1895. Sp.: *P. rotundata*.
- Paradiastylis** Calman in: Herdman, Rep. Ceylon Pearl Fish., v. 2 nr. 12 p. 173. 1904. Sp.: *P. brachyura*.
- Paralamprops** G. O. Sars in: Rep. Voy. Challenger, v. 19 pars 55 p. 6, 9, 26. 1887. Sp.: *P. serrato-costata*.
- Paraleucon** Calman in: Tr. zool. Soc. London, v. 18 i p. 2, 36. 1907. Sp.: *P. suteri*.
- Paranannastacus** T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 164. 1912. Sp.: *P. reptans*, *P. tardus*.
- Petalomera** Stimpson in: P. Ac. Philad., 1858 p. 226. 1859. Sp.: *P. granulata*. Decap.
- Petalomera** pro: *Petalopus* G. O. Sars 1865 G. O. Sars in: Forh. Selsk. Christian., no. 18 p. 13, 58. 1883. Sp.: *P. declivis*.
- Petalopus** Motschulski in: Bull. Soc. Moscou, v. 18 p. 107. 1845. Sp.: *P. metallicus*. Col.
- Petalopus** Claparède & Lachmann, Étud. Infus., pars 2 p. 438, 442. 1859. Sp.: *P. diffuens*. Prot.
- Petalopus** G. O. Sars in: Forh. Selsk. Christian., p. 196. 1865. Sp.: *P. declivis*.
- Petalosarsia** T. Stebbing in: Intern. sci. Ser., v. 74 p. 308. 1893. Sp.: *P. declivis*.
- Platyaspis** [pro: *Platynaspis* L. Redtenbacher 1843] L. Agassiz, Nomencl. zool., v. 2 Col. p. 129. 1846. Col.
- Platyaspis** G. O. Sars in: Forh. Selsk. Christian., p. 158. 1870. Sp.: *P. typica*.

- Platycuma** Calman in: Sci. Invest. Fish. Ireland, 1904 p. 11, 30. 1905. Sp.: *P. Holti*.
- Platysympus** pro: *Platyaspis* G. O. Sars 1870 T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 143. 1912. Sp.: *P. typicus*, *P. brachyurus*.
- Platytyphlops** T. Stebbing in: Ann. S. Afr. Mus., v. 10 v p. 159. 1912. Sp.: *P. peringueyi*.
- Procampylaspis** Bonnier in: Ann. Univ. Lyon, v. 26 p. 541. 1896. Sp.: *P. armata*, *P. echinata*.
- Pseudocoma** [pro: *Pseudocuma* G. O. Sars 1865] G. O. Sars in: Arch. Naturv. Kristian., v. 3 p. 466. 1878.
- Pseudocuma** G. O. Sars in: Forh. Selsk. Christian., p. 68, 193. 1865. Sp.: *P. bistriata*.
- Pseudodiatylis** Calman in: Siboga-Exp., pars 36 p. 16. 1905. Sp.: *P. ferox*.
- Pseudoleucon** Zimmer in: Zool. Jahrb., Syst. v. 18 p. 676. 1903. Sp.: *P. sorex*.
- Pterocuma** G. O. Sars, Crust. Norway, v. 3 p. 73. 1900. Sp.: *P. pectinata*, *P. Sowinskyi*, *P. rostrata*.
- Schizorhynchus** G. O. Sars, Crust. Norway, v. 3 p. 73. 1900. Sp.: *S. bilamelatus*, *S. eudorelloides*, *S. scabriusculus*, *S. abbreviatus*.
- Schizotrema** Calman in: Tr. zool. Soc. London, v. 18 iv p. 341, 360. 1911. Sp.: *S. depressum*, *S. bifrons*, *S. sordidum*.
- Scorpionura** J. V. Thompson MS. in: W. Thompson, Nat. Hist. Ireland, v. 4 p. 394. 1856. Sp.: *S. vulgaris*, *S. maxima*, *S. longicornis*.
- Spencebatea** A. M. Norman in: Ann. nat. Hist., ser. 5 v. 3 p. 67. 1879. Sp.: *S. abyssicola*.
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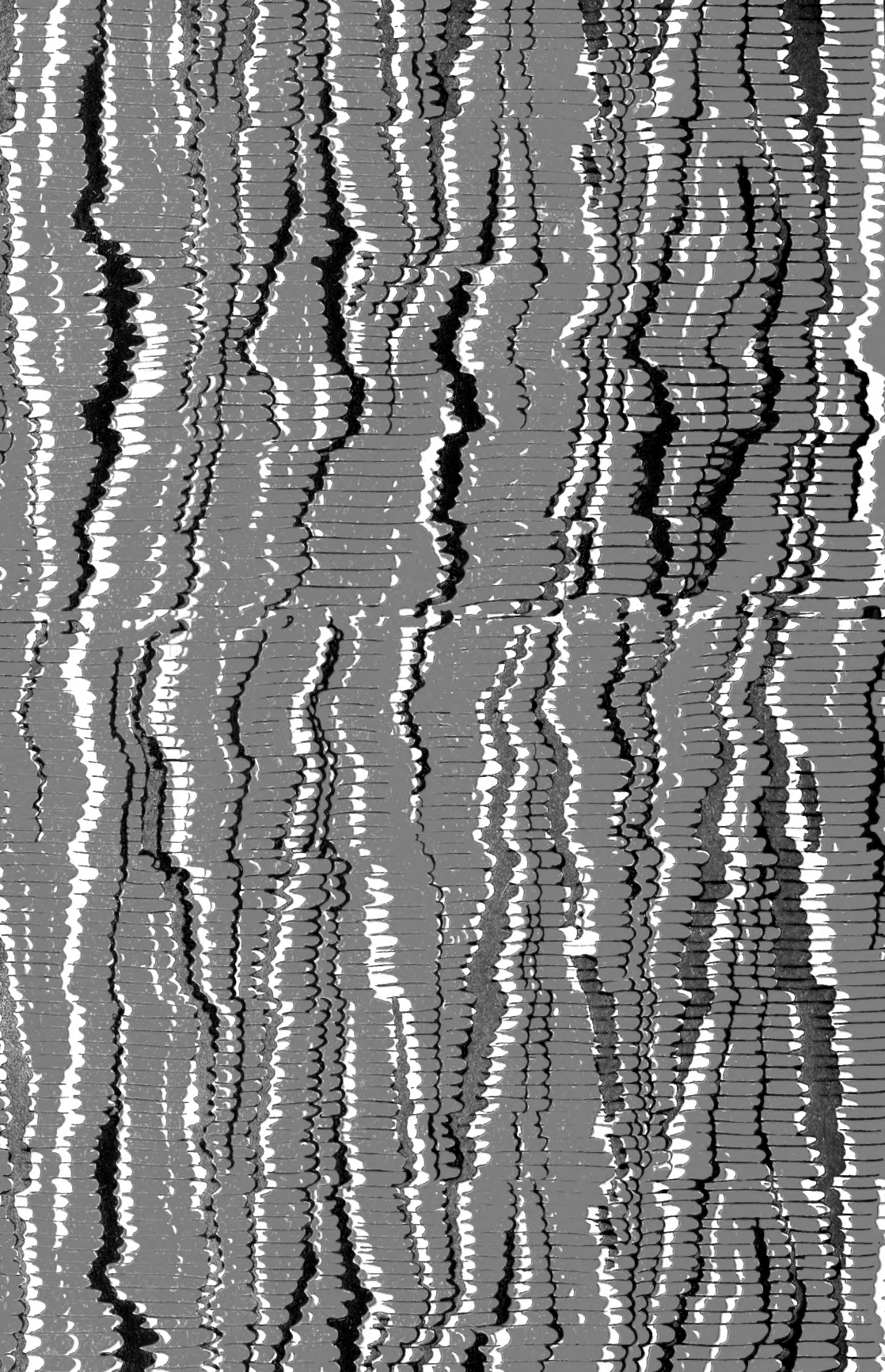
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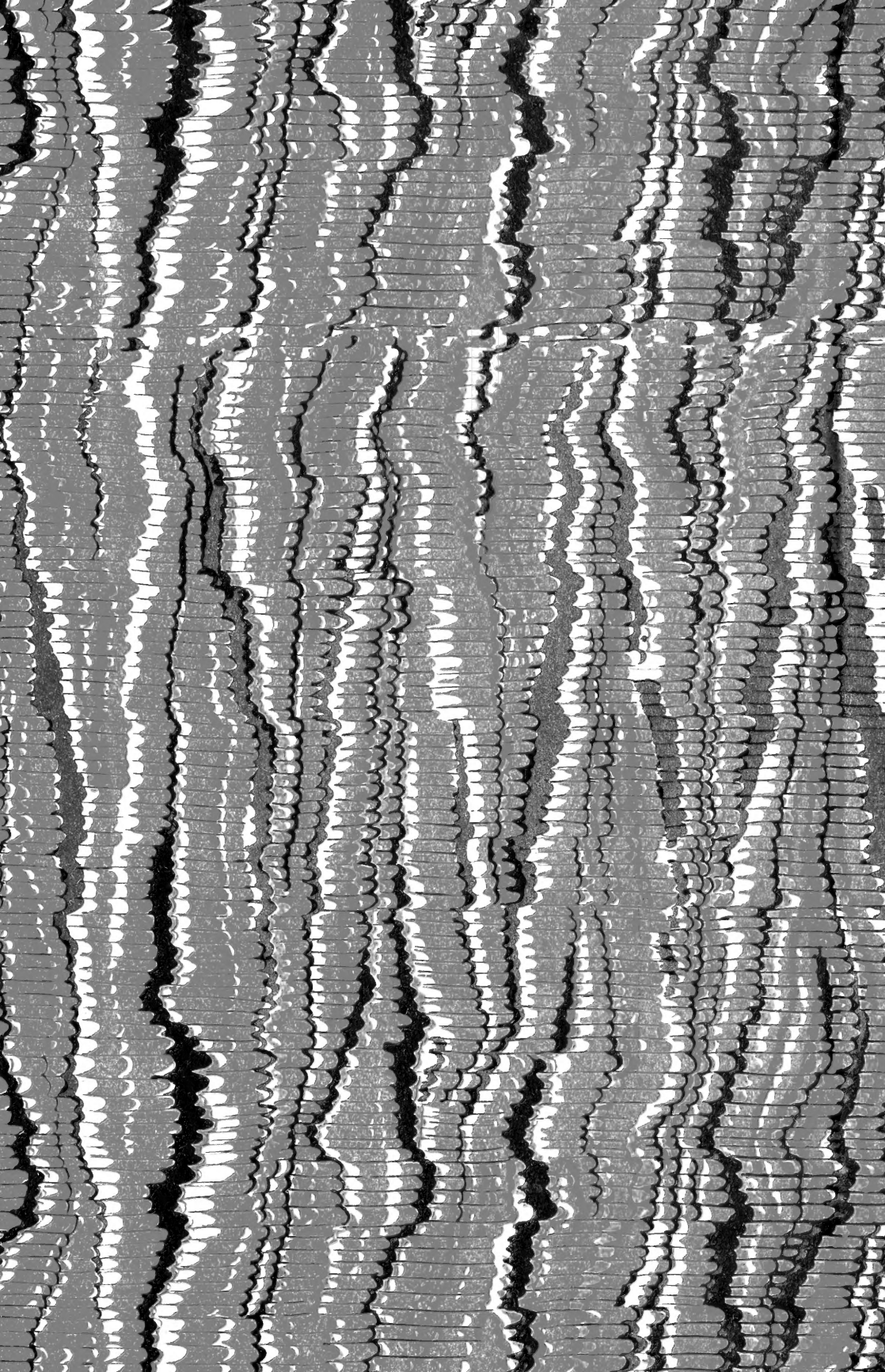
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